

# Fear of Needles and Seasonal Influenza Vaccine Acceptance Amongst Adults in the United Arab Emirates: A Cross-Sectional Study and Implications for Nursing

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## Abstract

**Introduction:** Seasonal influenza remains a challenge in the United Arab Emirates, and vaccination is an important preventive measure. However, fear of needles may be an obstacle in vaccination efforts.

**Objective:** The purpose of this study was to determine, in a non-clinical sample obtained from the UAE, how much of an impact fear of needles has on the decision to receive the seasonal influenza vaccine.

**Methods:** In the period September-December 2022, 372 participants were surveyed on their willingness to be vaccinated, their level of vaccine knowledge, and their level of fear of needles. Logistic regression models were used to assess the impact of fear of needles and vaccine knowledge on the decision to accept the seasonal influenza vaccine.

**Results:** Fear of needles and vaccine knowledge are significant predictors in the decision to receive the vaccine. There were no gender or ethnic differences in fear of needles, but there were differences in the decision to receive the vaccines, with women and non-Arabs being more hesitant.

**Conclusion:** Fear of needles may be an important variable to account for in public policies designed to improve vaccination rates in the UAE. For public health policy in the UAE, this implies that authorities must dedicate efforts to manage fear of needles in the general population. Efforts to address fear of vaccines in the general population must be made with proper training of nurses. Alternatively, authorities may need to seek oral alternatives for the administration of the seasonal influenza vaccine.

## Keywords

seasonal influenza, United Arab Emirates, fear of needles, vaccine knowledge, nursing

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## Introduction

### Review of Literature

While COVID-19 has been an immediate concern, seasonal influenza remains a long-term problem worldwide. According to some estimations, each year 3–5 million people suffer a severe form of the disease (Vincent et al., 2014). In the United Arab Emirates (UAE), influenza still presents some challenges, as flu outbreaks have been reported each year towards the end of summer (Saeed, 2022).

It has been frequently posited that the best approach to the persistent problem of seasonal influenza is effective vaccination (Medlock & Galvani, 2009). This should be

administered on a yearly basis, as the immune system needs a constant boost, in anticipation of the risks brought forth by the seasonal changes (Dos Santos, 2019). In this endeavor, nurses play a crucial role, as they bear the responsibility of administering the shot.

Yet, as with many other vaccines, the problem of hesitancy persists. Much research has been previously done on

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the main factors that lie behind vaccine hesitancy. Conspiracy mongering is one such factor extensively documented. Pertwee et al. (2022) explain that major factors, “such as anxieties around the pace of technological change or feelings of political disempowerment, are not within the control of the medical community.” This implies that despite the major breakthroughs in protection against viral infections, a wider psychosocial aspect remains an obstacle to the effective management of viral epidemics. Possibly due to political transformations and the global shift towards populist political styles (Bergmann, 2018), conspiracy theories are on the rise worldwide (Andrade, 2020), and many of these theories target medical aspects. In the UAE, vaccine hesitancy is still a problem (Andrade et al., 2022), although there is currently very little research on the role that conspiratorial thinking may play in this regard.

Medical conspiracy theories ultimately lead to disinformation (Grimes, 2020), and consequently, knowledge about vaccines has also been extensively documented as a predictor of people’s willingness to receive the vaccine. Previous studies report that higher educational levels predict greater acceptance of vaccine jabs (Navin et al., 2019). But this also pertains to specific knowledge about vaccines (Montagni et al., 2020), and on that basis, governments have realized that the best approach to curb vaccine hesitancy is through educational efforts (Burke et al., 2019; Kernéis et al., 2017; Ropeik, 2013). In the UAE, this educational approach has been embraced extensively (Ahamed et al., 2021; Nizam et al., 2022; Ortashi et al., 2013).

Yet, these concerns may reflect some bias derived from the cognitive revolution in psychology. For, other far more mundane variables may also be at play in seasonal influenza vaccine acceptance. An important additional variable to consider is trypanophobia, or the fear of needles. This has long been a concern in nursing research. One systematic review concludes that “the fear of needles can delay or result in avoidance of preventive measures such as vaccination” (McLenon & Rogers, 2019). The same study informs that “approximately one in six healthcare workers in long-term care facilities and 1 in 13 healthcare workers in hospitals avoided influenza vaccination because of the fear of needles” (McLenon & Rogers, 2019). This number raises concern, as presumably, nurses and healthcare workers would be psychologically more prepared to overcome the fear of needles, and therefore, the number in the general population may be higher.

Health authorities in the UAE have satisfactorily dealt with health educational efforts, and the seasonal influenza vaccine is widely available throughout the nation. Nurses have been properly instructed to promote the application of the seasonal influenza vaccine in the general population. Yet, it remains to be seen if some additional focus is needed. If fear of needles turns out to be an important factor in predicting seasonal influenza vaccine acceptance, then it is necessary for authorities to address this issue and

find working solutions, some of which pertain especially to the nursing profession.

## Objectives

In this study, we test this hypothesis: in predicting seasonal influenza vaccine acceptance, fear of needles is a predictive factor. Additionally, on the basis of demographic information, we test if there are correlations of fear of needles with gender and ethnicity.

## Methods

### Design

A survey was applied to participants in the sample. The survey had 5 sections.

First, demographic information was collected (age, gender, ethnicity). Ethnicity was divided into two groups: Arabs and non-Arabs. Age was divided into two groups split by the median.

Second, the Injection Phobia Scale-Anxiety (IPS-Anx) was included. This is a questionnaire that assesses the level of fear participants express in their reaction to the prospect of receiving an injection (Olatunji et al., 2010), and has been frequently used in nursing research. The IPS-Anx can be applied with 8 items based on a Likert scale, such as “Giving a blood sample by having a finger pricked” and “Getting an injection in the buttock.” Participants rate their level of anxiety from 1 (lowest) to 5 (highest).

Third, a vaccine knowledge scale devised by Zingg & Siegrist (2012) was included. This is an instrument composed of 9 items, which assess subjects’ knowledge about how vaccines work. Items are arranged on a Likert scale from 1 (strongly disagree) to 5 (strongly agree), presenting true statements (e.g., “The immune system of children is not overloaded through many vaccinations”) and false statements (e.g., “Many vaccinations are administered too early, so that the body’s own immune system has no possibility to develop”); false statements were scored reversely. Higher scores indicate a higher level of knowledge of how vaccines work.

Fourth, the Patient Health Questionnaire (PHQ-4) was included. This is an instrument with 4 statements that assess subjects’ mental health along two dimensions: depression (“Over the last 2 weeks, how often have you been bothered by little interest or pleasure in doing things?”) and anxiety (e.g., “Over the last 2 weeks, how often have you been bothered by not being able to stop or control worrying?”). Responses are structured around Likert scales (0 = Not at all; 3 = Nearly every day), with higher scores indicating higher levels of depression and anxiety.

Fifth, the following question was asked: “Have you received the seasonal influenza vaccine in the last 6 months, or do you intend to do so in the coming 6 months?”, with Yes/No as options. Answers with “yes”

were interpreted as indicating seasonal influenza vaccine acceptance; answers with “no” were interpreted as indicating seasonal influenza vaccine hesitancy.

### Research Questions

The present study seeks to answer the following research questions: 1) How is influenza vaccine acceptance in a sample in the UAE related to vaccine knowledge, fear of needles, anxiety and depression. 2) Are there gender differences in influenza vaccine acceptance, fear of needles and vaccine knowledge? 3) Are there ethnicity differences in influenza vaccine acceptance, fear of needles and vaccine knowledge? 4) Are there age differences in influenza vaccine acceptance, fear of needles and vaccine knowledge?

### Sample

Convenient (non-probabilistic) sampling was used, on the basis of willingness and availability to answer a survey. They were recruited from the general population in the emirates of Ajman, Sharjah and Dubai.

Sample size was calculated on the basis of Slovin’s criterion. With an estimated population of 10,000,000, a margin of error of 5% and a confidence level of 95%, required sample size would be 385. Responses were obtained by approaching face-to-face each participant and requesting them to scan a QR code with their phones, that would take them to the questionnaire. 372 returned complete answers, and 19 returned incomplete answers. Participants with incomplete answers were discarded. Therefore, response rate was 95%.

Responses were collected via web communication, data repositories accessed through links and QR codes (Microsoft Office), and face-to-face interactions. Data was collected during the period September-December 2022.

### Inclusion and Exclusion Criteria

Inclusion criteria was being an adult, having sufficiency in English, and being a resident in the UAE.

### Institutional Review Board Approval, Informed Consent and Human Subjects’ Rights

The research protocol was approved by an Institutional Review Board (Ajman University’s Research Ethics Committee # M-F-H-25-May), in compliance with the principles of the Helsinki declaration. All participants were informed of the nature of the study, were informed they could abandon the survey at any time, and were requested to provide consent before proceeding to answer questions.

### Statistical Analysis

Distributions of IPS-Anx and Vaccine Knowledge were split into quartiles. Distributions of the anxiety dimension and depression dimension of the PHQ-4 were split into two groups (positive, negative) along cutoff points ( $\geq 3$ ). Each of the subsequent new groupings were tested for association (chi-square test) with demographic variables (age, gender, ethnicity).

A logistic regression model was built. Influenza vaccine acceptance was the dependent variable; IPS-Anx (as continuous variable), Vaccine Knowledge (as continuous variable), age (as dichotomous variable), anxiety (as dichotomous variable), depression (as dichotomous variable), gender (as dichotomous variable) and ethnicity (as dichotomous variable) were the independent variables.

Statistical significance was placed at  $p \leq 0.05$ .

Statistical analyses were done using Jamovi software.

The IPS-Anx has been validated in various contexts (Bani et al., 2020) and has had acceptable levels of reliability (Bani et al., 2022). The scale measuring vaccine knowledge has been validated in previous applications, and is considered to have acceptable reliability (Andrade et al., 2022). The PHQ-4 has been validated in previous studies (Kroenke et al., 2009), and is considered reliable (Löwe et al., 2010).

## Results

### Sample Characteristics

54% of participants were male, 46% were female. Mean age was 32.8, S.D. = 9.22; the sample was split into two groups (younger/older) using the median (32) as reference.

70% of participants reported not accepting the seasonal influenza vaccine shot, 30% reported accepting it. 43% reported being negative for depression, 57% reported being positive for depression. 41% reported being negative for anxiety, 59% reported being positive for anxiety.

### Research Questions Results

Chi-square matrix of association of variables is presented in Table 1. Males had significantly higher levels of vaccine acceptance ( $p=0.008$ ), higher levels of vaccine knowledge ( $p=0.001$ ), lower levels of injection anxiety ( $p=0.001$ ), and lower levels of depression ratings ( $p=0.03$ ) than females. There were no significant differences in anxiety ratings ( $p=0.12$ ).

There was an association between ethnicity and vaccine acceptance, with Arabs having higher levels of vaccine acceptance. There was no association between ethnicity and injection anxiety. There was an association between ethnicity and vaccine knowledge. There were significant ethnicity differences in anxiety, with non-Arabs reporting higher levels. There were no differences in depression across ethnicities.

**Table 1.** Chi-Square Matrix.

	n	Males	Females	$\chi^2$ , p-value	Arabs	Non-Arabs	$\chi^2$ , p-value	Younger	Older	$\chi^2$ , p-value
<b>Sample size (n)</b>	<b>372</b>	202	170	-	189	183	-	188	184	-
<b>Vaccination Acceptance</b>		-	-	$\chi^2=7.11$ , p=0.008	-	-	$\chi^2=4.74$ , p=0.03	-	-	$\chi^2=0.78$ , p=0.38
<b>Yes</b>	<b>111</b>	36%	23%	-	35%	25%	-	32%	28%	-
<b>No</b>	<b>261</b>	64%	77%	-	65%	75%	-	68%	72%	-
<b>IPS-Anx</b>		-	-	$\chi^2=84.3$ , p<0.001	-	-	$\chi^2=3.74$ , p=0.3			$\chi^2=3.31$ , p=0.35
<b>0–25% (Q1)</b>	<b>99</b>	41%	9%	-	31%	22%	-	30%	23%	-
<b>25–50% (Q2)</b>	<b>101</b>	10%	48%	-	27%	27%	-	28%	26%	-
<b>50–75% (Q3)</b>	<b>82</b>	24%	19%	-	21%	24%	-	19%	25%	-
<b>75–100% (Q4)</b>	<b>90</b>	25%	24%	-	22%	27%	-	23%	26%	-
<b>Vaccine Knowledge</b>		-	-	$\chi^2=27.7$ , p<0.001	-	-	$\chi^2=4.76$ , p=0.19	-	-	$\chi^2=9.52$ , p=0.02
<b>0–25% (Q1)</b>	<b>110</b>	34%	24%	-	30%	30%	-	27%	32%	-
<b>25–50% (Q2)</b>	<b>76</b>	10%	32%	-	20%	21%	-	24%	16.80%	-
<b>50–75% (Q3)</b>	<b>114</b>	35%	26%	-	27%	34%	-	26%	36%	-
<b>75–100% (Q4)</b>	<b>72</b>	21%	18%	-	23%	15%	-	23%	15%	-
<b>Anxiety</b>		-	-	$\chi^2=2.43$ , p=0.12	-	-	$\chi^2=7.22$ , p=0.01	-	-	$\chi^2=1.19$ , p=0.28
<b>Negative (&lt; 3)</b>	<b>154</b>	45%	41%	-	48%	34%	-	44%	39%	-
<b>Positive (3+)</b>	<b>218</b>	55%	63%	-	52%	66%	-	56%	61%	-
<b>Depression</b>		-	-	$\chi^2=4.62$ , p=0.03	-	-	$\chi^2=0.61$ , p=0.43	-	-	$\chi^2=0.44$ , p=0.51
<b>Negative (&lt;3)</b>	<b>158</b>	48%	37%	-	44%	40%	-	44%	41%	-
<b>Positive (≥3)</b>	<b>214</b>	53%	64%	-	56%	60%	-	56%	59%	-

**Table 2.** Logistic Regression. Dependent Variable: Seasonal Influenza Vaccine Acceptance. Complete Dataset (n = 372).

Predictor	Unadjusted				Adjusted			
	Estimate	Odds ratio	95% CI	p-value	Estimate	Odds ratio	95% CI	p-value
<b>IPS-Anx</b>	-0.23	0.80	0.76–0.84	<0.001	-0.29	0.75	0.69–0.81	<0.001
<b>Vaccine knowledge</b>	0.07	1.07	1.03–1.12	0.003	0.12	1.13	1.06–1.19	<0.001
<b>Gender (reference level: males)</b>	-0.62	0.54	0.34–0.85	0.008	-0.25	0.78	0.42–1.47	0.44
<b>Age (reference level: older)</b>	-0.2	0.82	0.52–1.28	0.38	0.12	1.13	0.63–2.01	0.68
<b>Nationality (reference level: Arabs)</b>	-0.5	0.61	0.39–0.95	0.03	-0.34	0.71	0.40–1.28	0.25
<b>Anxiety (reference level: negative)</b>	-1.4	0.25	0.16–0.4	<0.001	-0.58	0.56	0.13–2.43	0.44
<b>Depression (reference level: negative)</b>	-0.67	0.51	0.33–0.8	0.003	1.49	4.43	1.06–18.56	0.04

There was no association between age groups and vaccine acceptance. There was no association between age group and injection anxiety. There was an association between age group and vaccine knowledge, with the younger group having higher levels of knowledge. There were no significant age differences in anxiety. There were no significant differences in depression across age groups.

The logistic regression model is presented in Table 2. After incorporating all variables in a multiple logistic regression model for seasonal influenza vaccine acceptance, three predictors variables showed statistically significant adjusted odds ratios: injection anxiety, vaccine knowledge and depression.

## Discussion

In this study, acceptance rates of seasonal influenza vaccine (30%) for this sample were above the minimum rate recommended by the WHO ( $\geq 159$  doses per 1000 population) (Palache et al., 2014). In this endeavor, nursing efforts (as reflected in this sample) have met the standard. Nevertheless, the figure still warrants concern, as the number of vaccinated individuals may need to increase in order to achieve robust herd immunity (Kim, 2014).

As per the logistic regression analysis, it is evident that, apart from vaccine knowledge, fear of needles was also

associated with the decision to take the seasonal influenza vaccine. This calls for a revision of priorities in policies to increase vaccination rates. While many studies have found strong evidence of the role played by vaccine knowledge in preventing vaccine hesitancy (Abebe et al., 2021; Betsch & Wicker, 2012; Đorđević et al., 2021; Jung et al., 2013; Voo et al., 2021; Zheng et al., 2022), virtually none have assessed the predictive power of fear of needles.

The results of the present study are therefore very important, to the extent that it relates to an important phenomenon in moral psychology and decision theory: *akrasia*, or weakness of will (A. Mele, 2010). Subjects may know very well that doing something is in their favor, but still refuse to do it, presumably because they lack willpower. Weakness of will has been evidenced in behaviors such as smoking (A. R. Mele, 2012) and overeating (Mann, 2008). The results of this study suggest that weakness of will may also be at play in this sample: while participants may understand how vaccines work and the need to receive the seasonal influenza shot, they may still be hesitant about it, not exclusively due to cognitive factors, but rather, due to weakness of will as a result of fear of needles. Even if this fear of needles is disproportionate to the actual threat, and the benefits of getting a vaccine outweigh the risks and harms by a large factor, subjects may still be hesitant, largely because of *akrasia*.

Fear of needles has been a relatively unexplored phenomenon amongst psychologists and nursing researchers, but some research sheds some light about its possible origins and features. Various symptoms have been observed in people who fear needles upon receiving an injection: fainting (Wright et al., 2009), vasovagal reactions (Deacon & Abramowitz, 2006), syncope (Martens et al., 2017), and nausea and vomiting (Sokolowski et al., 2010).

As with many situations that evoke fear reactions in people, there may be two origins in this phenomenon. First, there is the influence of classical conditioning (Du et al., 2008). As per the model of behaviorist theory, whenever a subject encounters an unpleasant situation, paired stimuli may be associated with that experience, and henceforth, fear reactions develop in response to the associated stimulus. Jenkins (2014) explains the case as follows: “a patient who recalls being held down as a child while receiving vaccinations, or undergoing anaesthetic, will have learned a paired association of ‘needles plus doctors equals pain and distress’. Therefore, being back in that situation produces distress, to the extent that sufferers will simply avoid the situation.”

Second, the evolutionary background of the human species may prime subjects towards fear of needles (Bracha et al., 2005). In the context of human evolution, being pricked by a sharp object represented a significant danger, as it dramatically increased the probability of suffering an injury, thus leading to infections and even death. Those individuals who instinctively avoided sharp objects therefore had an evolutionary advantage. As Orenius et al. (2018) explain, “a heritable predisposition to abruptly increase vagal tone

and collapse flaccidly rather than freeze or attempt to flee or fight in response to an approaching sharp object or the sight of blood may have evolved as an alternative survival reaction.”

In similar studies done in other regions by nursing researchers, fear of needles has also been found to be a relevant factor in predicting subjects’ willingness to receive vaccines. For example, in a study with the question “Does the Fear of Needles Influence Jamaicans’ Willingness to be vaccinated against COVID-19?”, it is concluded that “trypanophobia affects Jamaicans’ willingness to be vaccinated” (Bourne et al., 2022). In another similar study in Canada, it is stated that “24% of parents and 63% of children reported a fear of needles. Needle fear was the primary reason for immunization non-compliance for 7% and 8% of parents and children, respectively” (Taddio et al., 2012).

In a systematic review, it is concluded that “people’s queasiness at the thought of needles and blood were associated with levels of vaccine hesitancy across 24 countries” (Hornsey, 2021). Another study reported that about 10% of the population in developed countries suffer from fear of needles, and that prevents them from vaccinating (Hamilton, 1995).

Fear of needles may be a derivative of generalized anxiety. Previous research shows that particular phobias are comorbid with other anxiety disorders (Beck et al., 2005; Essau, 2003; Kaufman & Charney, 2000). The results of the present study also suggest this, as fear of needles has a moderate (very close to strong) correlation with anxiety. While the directionality of this relation is not established, it is presumable that generalized anxiety antecedes fear of needles, and consequently, a possibly effective way of dealing with fear of needles is by addressing generalized anxiety in individuals. In this endeavor, nursing professionals who work on thwarting the fear of needles amongst patients, must also engage in psychological work to address generalized anxiety.

It is interesting to note that in previous studies, fear of needles has been found to be higher amongst women (McLenon & Rogers, 2019). In this study, those results are reproduced. One possible explanation for this is that the fear of needles may be associated with social vulnerability (Milovanović et al., 2017). While the UAE still has strong patriarchal traditions, authorities have gone a long way in expanding opportunities for women and narrowing the gender gap in many variables (Al Khayyal et al., 2020; Allagui & Al-Najjar, 2018), and that may partly explain the results in this sample. Ultimately, this narrowing of the gender gap in many aspects of social life may reflect the lack of gender differences in fear of needles.

The results of the present study also suggest that there was a gender difference in seasonal influenza vaccine acceptance, with men more willing to accept the vaccine. This finding is similar to the evidence found in other studies, where women are more likely to be vaccine hesitant (Liu & Li, 2021; Reno et al., 2021; Schwarzingger et al., 2021). This finding also indicates that while fear of needles is an important predictor of vaccine

acceptance, other variables must be at play in the gender difference regarding seasonal influenza vaccine acceptance.

Given that the UAE is a multicultural society with differences between Arabs and non-Arabs, ethnicity is an important variable to consider in any study concerning public health and nursing practices. In this study, no relevant ethnic differences were found in fear of needles amongst participants of this sample. But, very much as with gender, there was a difference between Arabs and non-Arabs in their acceptance of seasonal influenza vaccine, with Arabs having greater levels of acceptance. This also indicates that fear of needles was not the sole variable to account for ethnic disparities in vaccine acceptance. Previous research indicates that perceived ethnic discrimination plays an important role in vaccine hesitancy (Morgan et al., 2022; Savoia et al., 2021; Willis et al., 2022). This may be the case with the current sample obtained in the UAE (Pasha-Zaidi, 2015; Vora, 2008), as non-Arab migrant workers may harbor feelings of alienation and this may prevent them from receiving the seasonal influenza shot.

Interestingly, in the present study, anxiety was not associated with the decision to take the vaccine, but depression did have a positive association with vaccine acceptance. The fact that depression and acceptance of vaccines were associated might seem at first counterintuitive but some plausible explanations may be explored. For example, individuals experiencing depression might be more attuned to their health and more likely to engage in health-seeking behaviors; this increased awareness may lead them to prioritize preventive measures like getting vaccinated against the flu (Madison et al., 2021). Likewise, depressed individuals may perceive themselves as more vulnerable to illness or complications, prompting them to take proactive steps to protect their health, including getting vaccinated against influenza (Orth et al., 2016). Furthermore, healthcare providers often recommend influenza vaccination, and individuals with depression may be more likely to follow medical advice; the trusting relationship between patients with depression and their healthcare providers could play a role in this decision. Individuals with depression may actively seek out health information, including the benefits of vaccination; this increased awareness could lead to a greater willingness to receive the influenza vaccine (Maciaszek et al., 2022).

### **Strengths and Limitations**

This study was sufficiently powered so as to avoid a Type-II error (and hence accept false negatives). This was a particular strength. Likewise, it approached the study of variables that remain largely unstudied in the Middle East and North Africa (MENA) region.

However, some limitations remain. Due to the challenges of recruiting subjects to answer a survey, this study relied on convenient sampling. The non-probabilistic characteristic of this study may have skewed some of the results. Future

studies should work with stratified sampling, including participants from all emirates in the UAE. Likewise, although the sample was sufficiently large so as to return statistically significant results, future studies should include larger sample sizes so as to arrive at more robust conclusions.

Due to the ethical challenges in obtaining informed consent from participants, this study focused on adults. Fear of needles may be more intense in children, and consequently, the fact that children were left out of this study may not reflect sufficiently well the state of affairs in the UAE, regarding fear of needles. Future research on this topic in the UAE should also focus on children.

### **Implications for Practice**

Given that fear of needles is an important factor in predicting acceptance of seasonal influenza vaccine, UAE authorities must reconsider its emphasis on educational aspects of vaccine acceptance, and place greater emphasis on the handling of fear of needles. Non-painful oral administration of the vaccine may serve as an alternative (Liebowitz et al., 2020), as it is expected that this mode of administration may find greater acceptance in the population.

Likewise, increased training programs for nursing staff are necessary, so as to properly handle the anxiety suffered by patients in receiving injections (Igoumenidis & Suhonen, 2021; Nir et al., 2003). This can be done on various dimensions. Nurses may strive to have open and honest conversations with individuals about their fear of needles; understanding the specific concerns and anxieties can help tailor the approach to address their needs (Duncanson et al., 2021). Nurses must also consider educating patients about the procedure, emphasizing the benefits of vaccinations or medical interventions; clear and accurate information can demystify the process and alleviate anxiety (Gaskell et al., 2005). Another proven technique is to engage the patient in conversation about non-medical topics to divert their attention from the procedure; using distraction techniques, such as asking about their interests or discussing a pleasant experience, can help reduce anxiety (Wang et al., 2022). Some practitioners also recommend teaching deep-breathing exercises or mindfulness techniques to help patients relax before and during the procedure; slow, controlled breathing can reduce overall anxiety and stress (McWhorter & Gil-Rivas, 2014). Allowing patients to choose a comfortable position for the procedure may also be effective, as some people may feel less anxious lying down, while others prefer to sit; providing a sense of control can help reduce anxiety (Lacey et al., 2008).

Some research suggests that the gradual exposure of individuals to the needle by showing them the equipment and explaining each step also helps; this step-by-step approach can help desensitize the fear and make the experience less overwhelming (McMurtry et al., 2016). Furthermore, as with any health intervention, establishing a trusting

relationship with the individual is fundamental; a caring and empathetic approach can significantly reduce anxiety (Ives & Melrose, 2010). Some practitioners have also recommended offering a small reward or incentive after the procedure; additionally, having distractions such as music, videos, or toys can help take the person's mind off the needle (McMurtry et al., 2015).

## Conclusion

The results obtained from this sample suggest that the seasonal influenza vaccine program has been moderately successful, but there is still need for improvement and there must be greater efforts in reaching larger sectors of the population in the UAE. While educational efforts are very relevant in this endeavor, the most relevant finding in this study suggests that when it comes to making the decision to receive the seasonal influenza vaccine, the fear of needles is also an important factor. This is a very important finding for nurses, as their demeanor in administering vaccines may have a considerable impact on the subjective perception of needles amongst patients.

## Availability of data and material

The datasets generated during and/or analysed during the current study are available from the corresponding author on reasonable request.

## Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

## Ethical approval

Protocols were approved by Ajman University's IRB.

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