Jordan Journal of Pharmaceutical Sciences, Volume 16, No. 4, 2023

Knowledge, Willingness to Pay and Beliefs for Seasonal Influenza Vaccination, A Cross-Sectional Study from Jordan

Ghaith M Al-Taani[1]*, Suhaib Muflih[2], Rawan Alsharedeh[3], Zaid Altaany[4]

1 Department of Clinical Pharmacy and Pharmacy Practice, Faculty of Pharmacy, Yarmouk University, Irbid, Jordan
2 Department of Clinical Pharmacy, Jordan University of Science and Technology, Irbid, Jordan
3 Department of Pharmaceutics and Pharmaceutical Technology, Faculty of Pharmacy, Yarmouk University, Irbid, Jordan
4 Department of Basic Medical Sciences, Faculty of Medicine, Yarmouk University, Irbid, Jordan

ABSTRACT

Background: Seasonal influenza is a viral illness associated with significant morbidity and mortality.
Objectives: This study aimed to assess preferences for utilizing the seasonal influenza vaccine.
Methods: Based on a review of the literature and discussions among the research team, a 37-item survey was created, pretested, and completed by the lay public in Irbid city. The survey assessed knowledge, willingness-to-pay, and beliefs regarding the seasonal influenza vaccine. Participants' willingness-to-pay for the influenza vaccine was determined using contingent valuation with a payment card. Logistic regression analysis was employed to determine predictors associated with willingness-to-pay.
Results: A total of 347 responses constituted the study sample. Respondents rated their knowledge about the influenza vaccine as good or excellent (62.5% of the total received responses). Approximately one-half (45.3%) of the respondents were willing to pay 5 JD for the influenza vaccine. It was found that standard of living, living location (city vs. village), and occupation (i.e., employment status) were independent predictors associated with higher willingness-to-pay for the influenza vaccine.
Conclusion: The participants were willing to pay a price close to the market price, thus affording the vaccine. Such data can help healthcare decision-makers develop promotive policies to improve vaccine uptake.
Keywords: Seasonal influenza vaccine, knowledge, willingness to pay, Jordan.

INTRODUCTION

Influenza is a viral illness associated with significant morbidity and mortality, making it a public health problem (1). Every year, seasonal influenza imposes substantial health and economic burdens on society. The influenza vaccine has been employed to reduce these morbidities and mortalities, particularly in elderly patients. Consequently, the Centers for Disease Control and Prevention (CDC) recommend vaccination for the elderly as a risk-reduction strategy against contracting influenza and its complications (2, 3). To address the impact of influenza on workdays, associated costs, and other issues, in the United States, free influenza vaccines have been offered to employees by their employers. It is considered one of the standard vaccines for healthcare workers, and their vaccine acceptance is based on perceived effectiveness, perceived likelihood of side effects, and whether they received the vaccine the previous year (4).

In the development of seasonal influenza vaccines, alterations in the influenza strains are usually carried out to target the strains expected to be present in upcoming seasons (5). Despite the anticipated challenges of

*Corresponding author: Ghaith M Al-Taani
g.altaani@yu.edu.jo
Received: 1/11/2022 Accepted: 28/9/2023.
DOI: https://doi.org/10.35516/jjps.v16i4.607

influenza vaccination, only a high level of quality evidence has been found for these vaccines in the prevention of laboratory-confirmed influenza. Considerably limited evidence exists for the expected benefits of the influenza vaccine in the presence of complications (e.g., pneumonia) (6). Overall, influenza vaccines are considered the best method for preventing and controlling influenza due to their safety and effectiveness profile. In terms of cost-effectiveness, studies have found influenza vaccination to be cost-effective, and even a cost-saving approach (7).

To date, the influenza vaccine has not been included in medical insurance schemes in Jordan. Influenza has been associated with a significant burden on the healthcare system. The present study aimed to explore public preferences for utilizing the influenza vaccine, with a specific focus on a willingness-to-pay approach. Willingness-to-pay is defined as "the maximum amount that people are willing to pay to gain outcomes that they view as desirable," in this case, the purchase of an influenza vaccine (8). Additionally, the study aimed to assess the beliefs of respondents surrounding the utilization of the influenza vaccine and identify predictors that might influence public willingness to pay for the influenza vaccine.

METHODOLOGY

Using survey methodology, insights into public preferences toward the influenza vaccine were obtained. A purposive questionnaire was distributed by hand to the lay public recruited from the city of Irbid in northern Jordan over the period November 2019 to January 2020. The survey was distributed in areas and shops around the university district in Irbid by two trained students.

Survey Design

A 37-item instrument was developed to gather information about background and demographic characteristics, knowledge, behaviors to deal with influenza disease, consequences while getting the disease, willingness to pay for the influenza vaccine, willingness to pay for specific desirable beneficial outcomes associated with vaccine use (e.g., not missing a day from work), and respondents' beliefs regarding vaccination.

The survey design was constructed based on a literature review of published work in the field (9, 10). Content and face validity were confirmed based on comments from faculty members with experience in this type of research. A content validity index was calculated using input from six faculty members within the School of Pharmacy at Yarmouk University holding MSc or Ph.D. degrees. The content validity index (CVI) measures the agreement between independent raters for the validity of items, with the item-CVI used as a measure of agreement for each item. The average of the item-CVI was used to assess the overall scale-CVI. It is recommended that the scale-CVI be 0.83 or higher, using input from six experts (11). The average content validity index was 0.915, and based on these assessments, modifications to the survey instruments were carried out.

Pilot exercise was carried out by distributing the survey to ten individuals, during which the clarity of questions and the logistics of distribution were assessed. The pilot data were included in the final study, and minor modifications were made whenever needed based on the pilot distribution results. With a Cronbach's alpha of 0.780, the internal consistency of the present study instrument was considered acceptable (12). For individual constructs such as the willingness to pay component, the Cronbach’s alpha was 0.858, and for the beliefs about the influenza vaccine section, it equaled 0.846.

The target population was current residents of Irbid city in Northern Jordan who are 18 years old. The survey

was anonymous to ensure respondents' confidentiality and privacy. Consent to take part in the study was considered as granted from the respondent by their agreement to sign the consent form. Ethical approval was obtained from the Institutional Review Board (IRB) at Jordan University of Science and Technology, Irbid (8/127/2019). Based on the population of adults in Irbid, with a margin of error of 5.3% and a 95% confidence level, the sample size calculation using an online sample size calculator, Raosoft (available at http://www.raosoft.com/samplesize.html), revealed a minimum sample size of 342 responses. This figure is similar to other recent surveys carried out (13-15).

Willingness to Pay

Respondents were asked to indicate their willingness to pay (WTP) for a self-paid influenza vaccine using a contingent valuation method. Before deciding on the best WTP value using the payment card approach, respondents were given the following informative statement: "The influenza vaccine has been demonstrated to minimize flu-related symptoms as well as the risk of significant flu complications, which can result in hospitalization or even death. Annual influenza vaccination is recommended, especially for high-risk groups, such as persons 65 and older, people with certain chronic medical conditions (such as asthma, diabetes, or heart disease), pregnant women, and children under the age of five, etc." Respondents were not informed of market pricing; instead, they were asked to choose their WTP from a range of values that included market prices. The choices provided for the participants were close-ended and were JD0, JD5, JD15, and JD25.

Data analysis

All collected data were entered using Microsoft Excel, and then the statistical analysis was carried out using IBM® SPSS® Statistics V25.0 (Armonk, NY, USA: IBM Corp.). Descriptive statistics (means and frequencies) were used for data description. Logistic regression (binary and ordinal) was used to assess the factors that affect the willingness to pay by the participants. Statistical significance was set to $p = 0.05$.

Results

Results of the current study were obtained from 347 received responses out of a total of 450 surveys distributed to the public in Irbid city, Jordan (a response rate of 77.1%). The sample was characterized by a higher proportion of females (62.0%) compared to males (38.0%). The majority (84.0%) of the respondents were in the age range of 18 to 29 years old, and 89.6% of the respondents were single. Unemployed individuals and students together constituted 72% of the sample. Most respondents (76.9%) reported an intermediate standard of living. A total of 55.3% of respondents lived in the city, while 44.7% lived in rural areas. Among the entire sample, 82.7% had health insurance. The full details regarding the demographics of the respondents are summarized in Table 1.

Table 1 Frequency distribution for the sociodemographic factors (N= 347)

Variable	Frequency (%)
Gender	
Male	132(38)
Female	215(62)
Age	
18 – 24 years	168(48.4)
25 – 34 years	143(41.2)
35 or above	36(10.4)
Education	
Secondary school or lower level	43(12.4)
Bachelor's degree	271(78.1)
Higher education	33(9.5)
Marital Status	
Single	261(75.2)
Married	86(24.8)
Occupation	
Unemployed	90(25.9)
Medical occupation	17(4.9)
Nonmedical occupation	80(23.1)
Student	160(46.1)
Standard of living	
Low	53(15.3)
Intermediate	267(76.9)
High	27(7.8)
Residence area	
Rural	155(44.7)
City	192(55.3)
Insurance	
Not insured	60(17.3)
Insured	287(82.7)
Perceived Knowledge of Flu Vaccine	
Fair	132(38)
Good	170(49)
Excellent	45(13)

Figure 1 illustrates the disease status of respondents. Approximately half (46.7%) of the respondents reported no diseases, while less than 10% suffered from conditions such as asthma, lung problems, sinusitis, or ear problems. Additionally, 3.5% of the respondents had heart disease, and another 3.5% had diabetes mellitus. A total of 8.4% of the respondents reported being smokers.

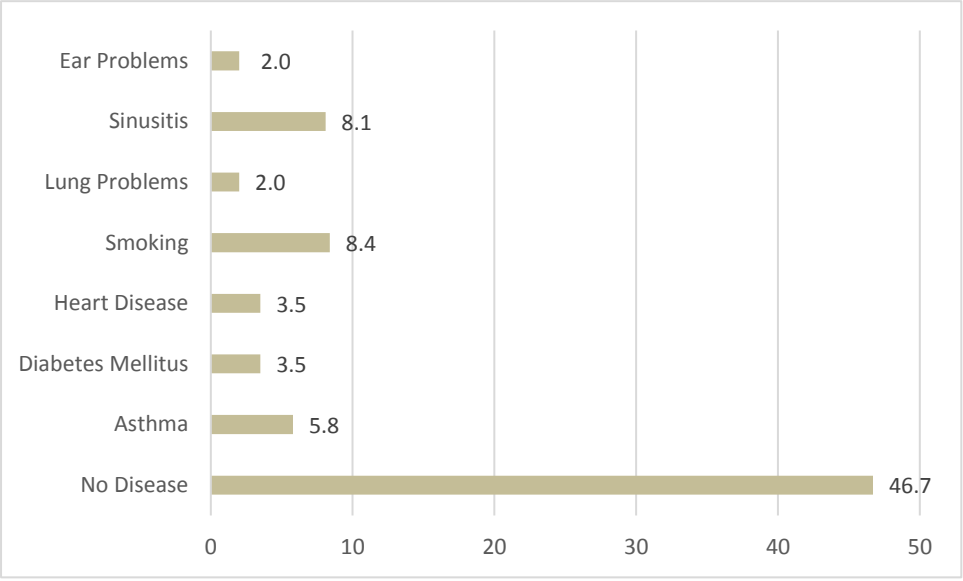

Figure 1: Disease present in the study sample

Table 2 provides details on the assessment of general knowledge about the influenza vaccine among the respondents and its relationship to willingness to pay. The respondents rated their knowledge of the influenza vaccine as good or excellent, accounting for 62.5% of the total respondents. Approximately 44.7% of respondents consulted a medical doctor if they had influenza, while 27.7% consulted a pharmacist. About 58.8% of the respondents believed that the influenza vaccine should be taken annually, and 59.7% thought that influenza virus strains change their shape every season. Independent predictors associated with the willingness to pay for the influenza vaccine were those who consulted a pharmacist (odds ratio = 3.676; p-value = 0.002) and those with the correct knowledge that the influenza vaccine should be taken annually (1.853; 0.017).

Table 2 Logistic regression for the association between willingness to pay and general knowledge of the Flu vaccine

Variable	Frequency (%)	Willing vs Not-Willing[1]	
		OR (95% CI)	P-value
Knowledge of influenza vaccine			
Fair	132(38)	1	
Good	170(49)	1.075(0.629-1.835)	0.791
Excellent	45(13)	1.28(0.557-2.941)	0.561
What to do if you had influenza			
Do nothing	52(15)	1	
Ask lay person	25(7.2)	1.823(0.621-5.355)	0.275
Consult medical doctor	155(44.7)	1.773(0.905-3.474)	0.095
Consult pharmacist	96(27.7)	3.676(1.631-8.285)	0.002
Use information from media and Internet	19(5.5)	1.871(0.534-6.562)	0.328
Do you think that influenza vaccine should be taken annually			
No	143(41.2)	1	
Yes	204(58.8)	1.853(1.119-3.069)	0.017
Do you think that influenza virus strains change its shape at every season			
No	140(40.3)	1	
Yes	207(59.7)	1.168(0.698-1.953)	0.554

[1] those who selected WTP as zero or not

Figure 2 illustrates the willingness to pay (WTP) for the influenza vaccine among respondents. Approximately one quarter (23.5%) are not willing to pay anything for influenza vaccination. About half (45.3%) of the respondents were willing to pay 5 JD for influenza vaccination. A total of 23.4% of the respondents were willing to pay 15 JD for influenza vaccination, and 7.9% were willing to pay 25 JD for influenza vaccination.

Table 3 presents the logistic regression analysis for the association between willingness to pay and demographic factors. It was found that a higher educational level (odds ratio = 5.205; p-value = 0.002), a higher living standard level (odds ratio = 4.408, p-value = 0.015), and living in the city as opposed to a rural area (odds ratio = 1.835, p-value = 0.018) were independent predictors for willingness to pay for seasonal influenza vaccination.

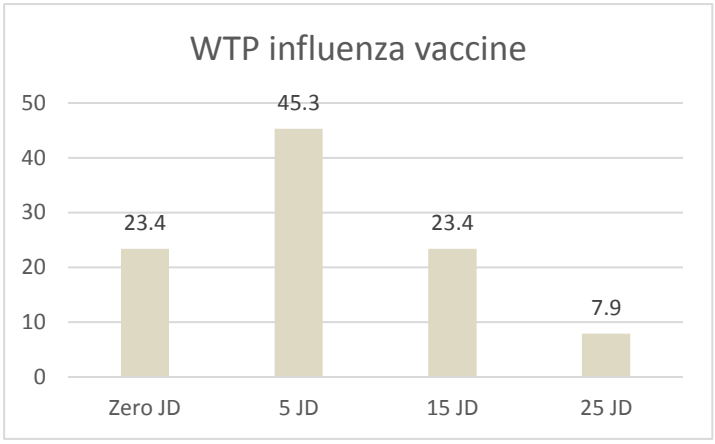

Figure 2: WTP influenza vaccine

Table 3 Logistic regression for the association between willingness to pay and other factors

Variables	Willing vs Not-Willing[1]	
	OR (95% CI)	**P-value**
Gender		
Male	1	
Female	1.191(0.716-1.984)	0.501
Age		
18 – 24 years	1	
25 – 34 years	0.92(0.484-1.748)	0.799
35 or above	1.222(0.679-2.199)	0.504
Education		
Secondary school or lower level	1	
Bachelor's degree	4.963(2.665-9.242)	0.00
Higher education	5.205(1.861-14.557)	0.002
Marital Status		
Single	1	
Married	1.397(0.756-2.584)	0.286
Occupation		
Unemployed	1	
Medical occupation	2.703(1.272-5.743)	0.01
Nonmedical occupation	1.365(0.617-3.02)	0.442
Student	1.055(0.581-1.914)	0.86
Standard of living		
Low	1	
Intermediate	3.096(1.664-5.76)	0
High	4.408(1.338-14.529)	0.015
Residence area		
Rural	1	
City	1.835(1.108-3.039)	0.018
Insurance		
Not insured	1	
Insured	0.903(0.509-1.602)	0.727

[1] those who selected WTP as zero or not

The assessment of beneficial outcomes associated with the use of influenza vaccination and the respondents' willingness to pay for these aspects was summarized in Table 4. The most commonly reported willingness to pay (WTP) was 5 JD for various aspects related to influenza, such as avoiding symptoms, tiredness associated with influenza, and not missing days from work. The least commonly reported WTPs were 0 JD (nothing) and 1 JD for many of the aspects. A significant proportion of respondents were willing to pay higher amounts (25 and 15 JD) for many aspects.

Table 4. Percentage of WTP to different beneficial outcomes associated with the use of influenza vaccine

Aspect/WTP	0 JD	1JD	5 JD	15JD	25JD
Not to suffer from the symptoms and tiredness associated with influenza	12	9	38.5	17.5	23
Not to miss one day from work	25.7	8.5	37.4	17.5	10.8
Not to suffer from the fever and joint pain associated with influenza	7.6	11.7	30.5	24	26.1
To take the vaccine once yearly	10.9	12.6	34.7	27.1	14.7
Not to take the medications for influenza	14.2	12.4	34.3	23.4	15.7
To maintain the health-related quality of life	8.5	9.7	26.1	19.9	35.8

Table 5 summarizes the respondents' beliefs regarding the influenza vaccine. The table presents the degree of agreement with different statements that indicate positive beliefs about vaccines in general. A significant percentage of respondents either agreed or strongly agreed with various positive belief statements. For instance, 53.4% of the respondents agreed or strongly agreed with the statement "taking the influenza vaccine is the right thing to do," and 66.6% of the respondents agreed or strongly agreed with the statement "vaccines are important to maintain health."

Table 6 illustrates that marital status (specifically, being married) and higher age are factors associated with the summated score for beliefs regarding the influenza vaccine, as determined through univariable linear regression analysis.

Table 5 Frequency of respondents' beliefs regarding influenza vaccine (N=347)

	Disagree (%)	Neutral (%)	Agree (%)	Strongly agree (%)
Taking influenza vaccine is the right thing to do	20.1	26.5	11.4	42
Vaccines are important to maintain health	7.6	25.9	19.8	46.8
it is important to take vaccine to prevent spread if infections	6.1	15.7	23	55.2
Influenza Vaccines are safe	8.5	27.2	24.9	39.5
if vaccines are not taken, disease can be spread to other individuals	13.2	21.6	25.4	39.8
We can develop serious disease if we don't take vaccines	19.8	24.5	18.1	37.6

Table 6 factors associated with summated score for beliefs regarding influenza vaccine using univariable linear regression analysis

	Beta coefficient (Standard error)	P value	95.0% Confidence Interval for B
Marital status, married	-1.766 (0.568)	0.002	-2.883 – -.648
Residence area	0.986 (0.503)	0.051	-.004 -1.977
Age, higher age	-1.309 (0.464)	0.005	-2.223 - -.395
WTP	0.460 (0.286)	0.109	-.103 - 1.023
Job new	-1.179 (0.627)	0.061	-2.413 - 055

The predictors of the multivariate ordinal logistic regression model for willingness to pay (WTP) for influenza vaccines are summarized in Table 7. According to the multivariate ordinal logistic regression model, it was found that standard of living, living location (city vs. village), and occupation (specifically, being employed) were independent predictors associated with WTP for influenza vaccine.

Table 7 Ordinal logistic regression for the factors associated with willingness to pay for influenza vaccine

Variable		WTP (0,5,15,25 JD)		
		Odds ratios	P value	95% confidence interval of the odds ratio
Education	Secondary school or lower level	1.95	0.432	0.37 - 10.23
	Bachelor's degree	1.47	0.521	0.45 - 4.75
	Higher education	Reference		
Gender	Male	1.09	0.760	0.63 - 1.89
	Female	Reference		
Living standard	Low	0.21	0.008	0.07 - 0.67
	Intermediate	0.51	0.167	0.20 -1.32
	High	Reference		
Living location	City	1.68	0.046	1.01 -2.79
	Village	Reference		
Health insurance	Insured	1.23	0.530	0.64 - 2.38
	Uninsured	Reference		
What to do if you had influenza	Do nothing	1.06	0.926	0.32 - 3.52
	Ask lay person	1.66	0.506	0.37 - 7.46
	Consult doctor	1.48	0.487	0.49 -4.41
	Consult pharmacist	1.62	0.423	0.50 - 5.28
	Media and internet	Reference		
Age (years)	18-29	3.51	0.075	0.88 - 13.99
	30-39	1.73	0.468	0.39 - 7.68
	40-65	Reference		
Occupation	Unemployed	0.41	0.037	0.18 - 0.95
	Employed	Reference		

DISCUSSION

Seasonal influenza imposes a significant burden on the healthcare system, particularly affecting the elderly, and influenza vaccination is considered the most cost-effective approach to prevent its impact (16-18). This study aimed to assess the willingness to pay (WTP) for influenza vaccine among the lay public, their willingness to pay for specific desirable outcomes associated with vaccine use, and the factors influencing WTP for influenza vaccine. The findings indicate that approximately 75% of the sample is willing to pay JD5 or more for the influenza vaccine. Respondents with a high and intermediate standard of living, as well as those who consult pharmacists, were identified as independent predictors for WTP for influenza vaccine through multivariate ordinal logistic regression analysis. The amount participants are willing to pay for the influenza vaccine in this study is similar to or higher than the market price for the vaccine. Access to pharmacists, the most accessible healthcare professionals, is posited to facilitate vaccine accessibility, and consulting with pharmacists independently predicts the willingness to pay for influenza vaccine. It is noteworthy that the administration of vaccines in community pharmacies has been legislated in Jordan (19).

The WTP was examined in this study using a payment card approach, encompassing not only the amount participants were willing to pay for the vaccine but also various desired outcomes related to its administration, such as how much they were willing to pay to avoid influenza symptoms and not miss a day of work. The majority were willing to pay the amount of JD5, signifying positive news as the overwhelming majority indicated a willingness to pay from JD5 to JD25. Research conducted in China, using a bidding game to estimate the WTP for seasonal influenza vaccine, found a median WTP of 10 US dollars, with 45% of the sample willing to pay the market price for the vaccine (20). Another Chinese study found an average WTP of 13.7 US dollars for respondents with chronic diseases and 12.5 US dollars for the elderly (21). Another group highlighted a vaccination rate of 54.3% for age groups 50 years and older (22). The encouraging WTP results suggest that price may not be a major hindrance, indicating a potential for high vaccine uptake. Despite this, the vaccination rate in Jordan was estimated to be between 9.9% and 27.5% (23). Another study from Jordan found a low vaccination rate (20%) (24).

The cost of preventive measures, such as vaccines, from an economic perspective, involves current expenditures to avert delayed problems or gain benefits (4). An overarching factor that could impact the willingness to pay (WTP) results in the present study is the presence of a substantial proportion (about three-quarters) of respondents who were unemployed or students, and approximately ten percent of respondents had a low standard of living. For individuals to afford the vaccine, the vaccine price should be perceived as low, and the user's ability to pay should be high (20).

Contact with formal healthcare systems is crucial for more serious diseases; however, disease and treatment knowledge, along with health literacy, are critical components that enable patients to derive the most benefit from consultations. The present study assessed the knowledge respondents had regarding influenza and influenza vaccine. Knowledge is an essential prerequisite for the uptake of the seasonal influenza vaccine and was identified as an independent predictor for the willingness to receive the influenza vaccine in the future (25, 26). In a study surveying healthcare workers, basic influenza knowledge was more associated with the group of healthcare workers who were vaccinated, suggesting that low knowledge of vaccination can impede vaccination rates even among healthcare providers, serving as a barrier (23). A questionnaire-based study in Jordan found that about half of the respondents were considered knowledgeable, with low knowledge regarding the role of seasonal influenza vaccination in disease prevention. This highlights a potential impact on vaccination coverage (27).

Almost half of the respondents reported that the initial point of contact for influenza would be a physician, and

about one-quarter would consult a pharmacist. The provision of influenza vaccination within community pharmacies aims to increase vaccination access and overall uptake. A study in the USA found that, despite pharmacists providing influenza vaccinations to millions of individuals, this did not significantly increase the overall vaccination rate. The direct benefit of such an approach would be to provide a more convenient way to administer the vaccine along with increased services from pharmacists (28). It is encouraging that a low percentage of respondents sought advice from laypersons like friends and used information from the media and the internet. Both are external factors that could influence the utilization of medicine and affect patient beliefs. However, the low quality of advice from laypersons and the noted potential influence of media and internet information on individual health decisions should be considered (29, 30).

Risks associated with vaccines have received considerable media attention, especially concerning childhood vaccines and the recent COVID-19 vaccine. Such issues can have negative consequences for the health of individuals and society overall. Respondents in this study expressed beliefs that vaccination is the right thing to do, vaccines are important for maintaining health, and it is crucial to take the vaccine to prevent the spread of disease. Such positive beliefs can contribute to increased influenza vaccine uptake. Occasionally, unhelpful attitudes may be expressed; for example, some elderly individuals may perceive themselves as not at risk of death from influenza. Despite this, a study conducted in the UK found that the elderly might choose to take the vaccine, and their attitudes are generally in favor (31). A UK study that assessed the uptake of influenza vaccine, knowledge about the vaccine, attitudes, and factors associated with seasonal influenza vaccine utilization among healthcare workers using an online survey found a positive attitude toward the vaccine (32). At the country level, vaccine uptake appears to be higher in countries with normative beliefs about vaccination use, including the degree to which important people to them believe they should or should not engage in vaccination behavior (33). Those with a positive attitude toward vaccination are more likely to accept the vaccine (34).

It has been noted that a higher standard of living is an independent predictor of willingness to pay (WTP) for the influenza vaccine. Patients with a higher standard of living are generally in a better societal position. Higher access to care is influenced by socioeconomic factors, particularly economic barriers to vaccination (20). Health beliefs and other vaccine-related aspects can be associated with higher WTP for seasonal influenza vaccine, including media coverage of deaths, the associated costs, and the perceived importance, safety, and efficacy of the vaccine (4, 20, 21, 33, 35). A study from Jordan found that the perceived risk of the vaccine and higher perceived benefits are important factors affecting the WTP for the COVID-19 vaccine (36). In the present study, knowledge about the seasonal influenza vaccine was associated with WTP for the vaccines. Other vaccine-related research conducted in Jordan highlighted that a major factor for not accepting the human papillomavirus vaccine is the low perceived risk of getting an infection (37). Another study from Jordan assessed factors affecting the utilization of the influenza vaccine and found that most respondents are willing to receive the influenza vaccine if provided free of charge (38).

Several future research ideas can be proposed to address contextual issues related to seasonal influenza and influenza vaccination. These include efforts to change societal attitudes and better inform the public about the value of vaccinations, assessing the impact of the COVID-19 pandemic on vaccination rates, and developing novel vaccine formulations that offer improved properties while retaining safety and efficacy.

There were a few limitations that affect the interpretation of the current research findings, including range bias, wherein the respondent's choice of the maximum WTP depends on the range of values offered by the payment card

(39). Despite the potential for such bias, the payment card's value range was carefully chosen to encompass the market price, as well as values both above and below it. Another limitation that restricts the generalizability of the study is the large proportion of unemployed, student, and young respondents, which influenced the amount that respondents were willing to pay.

CONCLUSION

The study findings revealed that the majority of participants were willing to pay for annual influenza vaccines, with amounts ranging from 5 JD to 25 JD, indicating the perceived benefits of the vaccine. Several factors highlighted in the present study significantly influenced consumer decisions to pay for the vaccine, particularly consulting pharmacists, educational level, living standard, and residing in urban areas. A larger and more representative study is needed to investigate other factors that might contribute to consumers' decisions. While almost one-fourth of the sample of commuters preferred not to pay for the vaccine, such data could help healthcare policymakers and decision-makers develop promotive policies to improve vaccination uptake and increase its accessibility.

Conflicts of Interest: None to declare.

REFERENCES

1. Simonsen L. The global impact of influenza on morbidity and mortality. *Vaccine*. 1999;17:S3-S10.
2. Grohskopf LA, Sokolow LZ, Olsen SJ, Bresee JS, Broder KR, Karron RA. Prevention and control of influenza with vaccines: recommendations of the Advisory Committee on Immunization Practices, United States, 2015–16 influenza season. *Elsevier*. 2015; p. 2767-75.
3. Prevention CfDCa. Updated interim influenza vaccination recommendations--2004-05 influenza season. MMWR Morbidity and mortality weekly report. 2004;53(50):1183-4.
4. Chapman GB, Coups EJ. Predictors of influenza vaccine acceptance among healthy adults. *Preventive medicine*. 1999;29(4):249-62.
5. Organization WH. Recommended viruses for influenza vaccines for use in the 2010-2011 northern hemisphere influenza season. Weekly Epidemiological Record= Relevé épidémiologique hebdomadaire. 2010;85(10):81-92.
6. Michiels B, Govaerts F, Remmen R, Vermeire E, Coenen S. A systematic review of the evidence on the effectiveness and risks of inactivated influenza vaccines in different target groups. *Vaccine*. 2011;29(49):9159-70.
7. Nichol KL. The efficacy, effectiveness and cost-effectiveness of inactivated influenza virus vaccines. *Vaccine*. 2003;21(16):1769-75.
8. A.E B, Greenberg DH, Vining AR, Weimer DL. Cost-benefit analysis: concepts and practice. 2017.
9. Kennedy A, Basket M, Sheedy K. Vaccine attitudes, concerns, and information sources reported by parents of young children: results from the 2009 HealthStyles survey. *Pediatrics*. 2011;127(Supplement_1):S92-S9.
10. Al-Azzam SI, Alzoubi KH, AbuRuz S, Alefan Q. Drug-related problems in a sample of outpatients with chronic diseases: a cross-sectional study from Jordan. *Therapeutics and clinical risk management*. 2016:233-9.
11. Yusoff MSB. ABC of content validation and content validity index calculation. *Education in Medicine Journal*. 2019;11(2):49-54.
12. Gliem JA, Gliem RR, editors. Calculating, interpreting, and reporting Cronbach's alpha reliability coefficient for Likert-type scales2003: Midwest Research-to-Practice Conference in Adult, Continuing, and Community.

13. Hejaz HA. Knowledge and Attitudes towards Antibiotic Usage. *Jordan Journal of Pharmaceutical Sciences*. 2023;16(2):447-.
14. Jarab AS, Al-Qerem W, Mukattash TL, Alqudah SG, Abu-Zaytoun L, Al-Azayzih A, et al. Public Perception of Pharmacist's Role during COVID-19 Outbreak in Jordan. *Jordan Journal of Pharmaceutical Sciences*. 2022.
15. Amara N, Naser AY, Esra'O T. Patient Satisfaction with Pharmaceutical Services in Jordan: A Cross-Sectional Study. *Jordan Journal of Pharmaceutical Sciences*. 2023;16(1):1-10.
16. Molinari N-AM, Ortega-Sanchez IR, Messonnier ML, Thompson WW, Wortley PM, Weintraub E, et al. The annual impact of seasonal influenza in the US: measuring disease burden and costs. *Vaccine*. 2007;25(27):5086-96.
17. Peasah SK, Azziz-Baumgartner E, Breese J, Meltzer MI, Widdowson M-A. Influenza cost and cost-effectiveness studies globally–a review. *Vaccine*. 2013;31(46):5339-48.
18. Pop-Vicas A, Gravenstein S. Influenza in the elderly–a mini-review. *Gerontology*. 2011;57(5):397-404.
19. Alnahar SA, Gkountouras G, Darwish RM, Bates I. Community pharmacists workforce readiness to deliver vaccination services: A cross- sectional study from Jordan. *Pharmacology Research & Perspectives*. 2022;10(2): e00943.
20. Hou Z, Chang J, Yue D, Fang H, Meng Q, Zhang Y. Determinants of willingness to pay for self-paid vaccines in China. *Vaccine*. 2014;32(35):4471-7.
21. Lai X, Rong H, Ma X, Hou Z, Li S, Jing R, et al. Willingness to pay for seasonal influenza vaccination among children, chronic disease patients, and the elderly in China: a national cross-sectional survey. *Vaccines*. 2020;8(3):405.
22. Eilers R, De Melker H, Veldwijk J, Krabbe P. Vaccine preferences and acceptance of older adults. *Vaccine*. 2017;35(21):2823-30.
23. Martinello RA, Jones L, Topal JE. Correlation between healthcare workers' knowledge of influenza vaccine and vaccine receipt. *Infection Control & Hospital Epidemiology*. 2003;24(11):845-7.
24. Assaf AM, Hammad EA, Haddadin RN. Influenza vaccination coverage rates, knowledge, attitudes, and beliefs in Jordan: a comprehensive study. *Viral immunology*. 2016;29(9):516-25.
25. Chan EY-Y, Cheng CK-Y, Tam GC-H, Huang Z, Lee PY. Willingness of future A/H7N9 influenza vaccine uptake: a cross-sectional study of Hong Kong community. *Vaccine*. 2015;33(38):4737-40.
26. Zhang J, While A, Norman I. Seasonal influenza vaccination knowledge, risk perception, health beliefs and vaccination behaviours of nurses. *Epidemiology & Infection*. 2012;140(9):1569-77.
27. Abu-Rish EY, Elayeh ER, Mousa LA, Butanji YK, Albsoul-Younes AM. Knowledge, awareness and practices towards seasonal influenza and its vaccine: implications for future vaccination campaigns in Jordan. *Family practice*. 2016;33(6):690-7.
28. McConeghy KW, Wing C. A national examination of pharmacy-based immunization statutes and their association with influenza vaccinations and preventive health. *Vaccine*. 2016;34(30):3463-8.
29. Benigeri M, Pluye P. Shortcomings of health information on the Internet. *Health promotion international*. 2003;18(4):381-6.
30. Marshall LA, Williams D. Health information: does quality count for the consumer? How consumers evaluate the quality of health information materials across a variety of media. *Journal of Librarianship and Information Science*. 2006;38(3):141-56.
31. Cornford C, Morgan M. Elderly people's beliefs about influenza vaccination. *British Journal of General Practice*. 1999;49(441):281-4.

32. Mytton O, O'moore E, Sparkes T, Baxi R, Abid M. Knowledge, attitudes and beliefs of health care workers towards influenza vaccination. *Occupational medicine*. 2013;63(3):189-95.
33. Kwong EWy, Pang SMc, Choi Pp, Wong TKs. Influenza vaccine preference and uptake among older people in nine countries. *Journal of advanced nursing*. 2010;66(10):2297-308.
34. Worasathit R, Wattana W, Okanurak K, Songthap A, Dhitavat J, Pitisuttithum P. Health education and factors influencing acceptance of and willingness to pay for influenza vaccination among older adults. *BMC geriatrics*. 2015;15(1):1-14.
35. Sundaram N, Purohit V, Schaetti C, Kudale A, Joseph S, Weiss MG. Community awareness, use and preference for pandemic influenza vaccines in Pune, India. *Human vaccines & immunotherapeutics*. 2015;11(10):2376-88.
36. Arabyat RM, Nusair MB, Al-Azzam SI, Amawi HA, El-Hajji FD. Willingness to pay for COVID-19 vaccines: Applying the health belief model. *Research in Social and Administrative Pharmacy*. 2023;19(1):95-101.
37. Sallam M, Al-Mahzoum K, Eid H, Assaf AM, Abdaljaleel M, Al-Abbadi M, et al. Attitude towards HPV vaccination and the intention to get vaccinated among female university students in health schools in Jordan. *Vaccines*. 2021;9(12):1432.
38. Sallam M, Ghazy RM, Al-Salahat K, Al-Mahzoum K, AlHadidi NM, Eid H, et al. The role of psychological factors and vaccine conspiracy beliefs in influenza vaccine hesitancy and uptake among Jordanian healthcare workers during the COVID-19 pandemic. *Vaccines*. 2022;10(8):1355.
39. Shackley P, Dixon S. The random card sort method and respondent certainty in contingent valuation: an exploratory investigation of range bias. *Health economics*. 2014;23(10):1213-23.

المعرفة والاستعداد للدفع والمعتقدات الخاصة بالتطعيم ضد الأنفلونزا الموسمية، دراسة مقطعية من الأردن

غيث محمد الطعاني[1]*، صهيب مفلح[2]، روان الشريدة[3]، زيد الطعاني[4]

[1] قسم الصيدلة السريرية والممارسة الصيدلانية، كلية الصيدلة، جامعة اليرموك، اربد، الأردن.

[2] قسم الصيدلة السريرية، جامعة العلوم والتكنولوجيا الأردنية، اربد، الأردن.

[3] قسم الصيدلانيات والتقنية الصيدلانية، كلية الصيدلة، جامعة اليرموك، اربد، الأردن.

[4] قسم العلوم الطبية الأساسية. كلية الطب، جامعة اليرموك، اربد، الأردن.

ملخص

الخلفية: الأنفلونزا الموسمية مرض فيروسي مرتبط بمعدلات امراض ووفيات كبيرة.

الأهداف: هدفت هذه الدراسة إلى تقييم الأفضليات لاستخدام لقاح الأنفلونزا الموسمية.

الطرق: استنادا إلى مراجعة الأبحاث المنشورة والمناقشة بين فريق البحث، تم تطوير استبيان مكون من 37 بند، وتم اختباره مسبقا، وتمت تعبئته من قبل العامة في مدينة إربد. يقيم الاستبيان المعرفة والاستعداد للدفع والمعتقدات المتعلقة بلقاح الأنفلونزا الموسمية. تم تحديد مدى استعداد المشاركين لدفع ثمن لقاح الأنفلونزا باستخدام بطاقة الدفع. تم استخدام تحليل الانحدار اللوجستي لتحديد العوامل المرتبطة بالاستعداد للدفع.

النتائج: بلغ عدد إجابة عينة الدراسة 347 إجابة. صنف المشاركون معرفتهم بلقاح الأنفلونزا بأنها جيدة أو ممتازة (62.5% من إجمالي الاستجابات). أبدى ما يقرب من نصف (45.3%) من أفراد العينة استعدادهم لدفع 5 دنانير مقابل لقاح الأنفلونزا. لقد وجد أن مستوى المعيشة، وموقع المعيشة (المدينة مقابل القرية) والمهنة (الموظفون) كعوامل مرتبطة بارتفاع الرغبة في الدفع للقاح الأنفلونزا.

الاستنتاج: كان المشاركون على استعداد لدفع سعر قريب من سعر السوق، وبالتالي لديهم القدرة للحصول على اللقاح. يمكن أن تساعد مثل هذه البيانات صناع القرار في مجال الرعاية الصحية على تطوير سياسات ترويجية لاستخدام اللقاح.

الكلمات الدالة: لقاح الأنفلونزا الموسمية، المعرفة، الاستعداد للدفع، الأردن.

* ***المؤلف المراسل: غيث محمد الطعاني***

g.altaani@yu.edu.jo

تاريخ استلام البحث: 2022/11/1 وتاريخ قبوله للنشر: 2023/9/28.