

Knowledge and Perceptions Regarding Herpes Zoster and its Vaccine in Saudi Arabia: A Community-Based Survey

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Abstract

Herpes zoster (HZ) is a viral infection that can infect humans, and causes chicken pox and/or shingles. With the emergence of HZ vaccine, this community-based survey was embarked upon to assess the knowledge and perceptions regarding the infection and its vaccine in Saudi Arabia. A cross-sectional study design and non-probability convenient sampling methods were used to recruit 939 participants that responded to the standardised closed-ended questionnaires, administered through a face-to-face interview or online survey. Pearson's χ^2 test, and logistic regression analysis were used in the data analysis at 5% significant level. Beta coefficients and 95% confidence interval (CI) were employed to present the outcomes of crude odds ratio (COR) and adjusted odds ratio (AOR). Awareness about HZ and its vaccine were 87.0% and 54.9%, respectively. The highest source of knowledge about the viral infection was internet (24.1%), with immunodeficiency identified as the most common symptom (33.5%). Awareness about HZ was more likely among participants aged 56 – 60 years (AOR=1.96; 95% CI: 1.07, 3.58), 61 – 65 years (AOR: 95% CI: 1.22, 4.40), and those in urban area (AOR=3.58; 95% CI: 2.40, 5.35). The source of knowledge regarding HZ vaccine was highest (26.2 %) with doctors. For HZ vaccine, participants who were more likely aware included those aged 50 – 55 years (AOR=1.77; 95% CI: 1.15, 2.72), Saudi citizens (AOR=1.42; 95% CI: 1.04, 1.94), and urban dwellers (AOR=1.68; 95% CI: 1.25, 2.27). This study indicates significant variations in knowledge and perceptions of the participants regarding HZ and its vaccine. There is a need for more enlightenment on the virus and its vaccine in the study area.

Keywords: Herpes zoster, Vaccine, Knowledge, Perception, Saudi-Arabia

Introduction

Herpes zoster, also known as shingles is a viral infection caused by the reactivation of the *Varicella zoster virus* (VZV), which produces painful rashes that can appear anywhere on the body (Sivapathasundharam *et al.*, 2020; Cadogan *et al.*, 2022; Al-Orini *et al.*, 2023). The VZV (Human herpes virus 3 or Human alpha

herpes virus 3) is one of the nine known viruses capable of infecting humans, and causing chicken pox mostly in children and young adults, and shingles in adults, but rarely in children (Nagel & Gilden, 2013; Kennedy & Gershon, 2018). At the onset, VZV infection leads to varicella and subsequently transitions into a dormant phase within the dorsal root ganglia. However, it is reported that as individuals age or experience immunodepression, their cell mediated immunity to the VZV weakens, leading to the reactivation of VZV, and consequently shingles (Bricout *et al.*, 2019). Complications of shingles include post-herpetic neuralgia, cranial nerve palsies, zoster paresis, among various neurological conditions. Additionally, shingles can result to vasculopathy and multiple ocular disorders, and these neurological and ocular complications can develop even without rashes (Al-Khalidi *et al.*, 2022).

Although there have been comprehensive reports on the prevalence of HZ in Saudi Arabia, there is a global trend in the incidence and severity of the infection, which increases with advancing age, particularly 50 years and above, indicating their vulnerability to the viral infection (Nagel & Gilden, 2013). The incidence rate of the disease globally shows variations among different age groups. For example, in younger, healthy populations, the annual rate of the disease cases is estimated to be between 1.2 to 3.4 per 1000 individuals. People who are above 65 years have an intensified incidence of the disease, ranging from 3.9 to 11.8 cases per 1000 individuals (Binsaeedu *et al.*, 2022; Al-Orini *et al.*, 2023). The prevalence and severity of HZ necessitate the use of effective vaccine strategies to control the disease.

The emergence of HZ vaccine has been an important public health breakthrough, as it revolutionised the control of the disease. The prophylactic HZ vaccine licensed in the Kingdom of Saudi Arabia (KSA) is the recombinant subunit glycoprotein E vaccines called SHINGRIX. It is reported that HZ vaccine is targeted at individuals aged 50 years and above (Bricout *et al.*, 2019; Alhothali *et al.*, 2023), and SHINGRIX is administered at no cost to this population in Saudi Arabia. Recent vaccines have proved to be effective in reducing the incidence and severity of the disease and its complications (Al-Orini *et al.*, 2023; Badur *et al.*, 2023).

Additionally, HZ vaccines have recorded a very high availability, but their uptake varies greatly across different populations and geographical regions. It has been shown that various factors influence vaccine uptake, including age, gender, levels of education and income, religious and cultural beliefs, among others

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(Alqifari, n.d.; Badur *et al.*, 2023; Forer *et al.*, 2023; Kain *et al.*, 2023). A study carried out in Saudi Arabia, which aimed to access the vaccination rates against HZ indicated that only 4.5% of individuals received the vaccine (Binsaeed *et al.*, 2022). Furthermore, there have been studies which centered on particular regions or risk categories (Alhothali *et al.*, 2023; Alfandi *et al.*, 2024), emphasising on the need for a more thorough assessment of Saudi Arabian's knowledge and attitude on shingles and its vaccine.

The reduced awareness of the Saudi Arabian community, regarding the prevalence of HZ and its low vaccination rates suggests the need to educate the communities, and enhance their awareness. Hence, this community-based survey was undertaken to assess the knowledge and perceptions regarding HZ and its vaccine in Saudi Arabia. Though there is high global recognition of the importance of vaccination, there has not been any substantial study on the knowledge and perceptions regarding HZ vaccination in Saudi Arabia, particularly in local communities. This study aims to address this gap by proffering introspects into the local population's understanding and approval of the HZ vaccines.

Materials and Methods

Study Design, Setting and Population Characteristics

The study design was cross-sectional. It was applied to assess the knowledge and perceptions of Saudi Arabian population on HZ and its vaccine. The study focused on adult population of Saudi Arabians citizens, comprising both genders, individuals aged 50 years and above; and those from various socioeconomic classes.

Sampling Technique and Selection of Study Participants

The study involved a total of 939 participants, who were selected using non-probability, convenient sampling method. The inclusion criteria recognised only King Saudi Arabian citizens, who spoke Arabic (for easier communication). Visitors to the Saudi Arabia were excluded, and individuals aged less than 50 years at the time of data collection were excluded from the study.

Data Collection Tool

A closed-ended questionnaire adapted from a study conducted in KSA (Alfandi *et al.*, 2024), and slightly modified was used for data

collection. The modifications involved the addition of questions derived from a previous report in the United States of America (USA) (Baalbaki *et al.*, 2019) to augment the original questions. In total, the questionnaire included 37 close-ended questions, which were summarised into demographics, knowledge of HZ and its vaccination as well as perceptions. The questionnaires were administered to the participants, using either face-to-face interview or online survey. The former was used to elicit information from participants found in public places such as shopping malls, parks, waiting areas of hospitals and King Salman Social Centre, while the later was administered through Google form. Participants were instructed to completely answer each item from the *yes* or *no*, *true* or *false*, and multiple-choice questions, based on their current knowledge.

Data Summary and Statistical Analysis

Data obtained from this study were summarised, using frequency tables and bar charts, with both absolute and percentage values recorded as applicable. Statistical analysis was performed, using Statistical Package for Social Sciences for Windows, version 25.0 (IBM Corp., Armonk, New York, USA). The associations between each of the variables considered and participants' knowledge on awareness of HZ and its vaccine were determined using Pearson's Chi-square (χ^2) test. Additionally, a logistic regression analysis was conducted to identify predictors of knowledge on awareness of HZ and its vaccine. Beta coefficients and 95% confidence interval (95% CI) were used to present the outcomes of crude odds ratio (COR) and adjusted odds ratio (AOR), with significant level set at $P < 0.05$.

Results and Discussion

Socio-Demographic Characteristics of the Study Participants

Table 1 shows the sociodemographic characteristics of the study participants, which indicates that majority were females (66.1%), belonged to age group 50-60 years (66.1%), held postgraduate degree (61.3%); suffered chicken pox (54.9%), and had heard about HZ (87.0%) and its vaccine (54.9%). Most of these participants were Saudi Arabian citizens (77.2%), who resided in urban area (73.2%) and government workers (24.6%).

Table 1. Socio-demographic characteristics of the study participants

Variable	Category	Observed count	Percentage value (%)
Gender *	Male	363	38.7
	Female	576	61.3
Age (in years)	50 – 55	357	38.0
	56 – 60	264	28.1
	61 – 65	199	22.2
	> 65	119	12.7
Nationality	Saudi	725	77.2
	Non-Saudi	214	22.7
Place of residence	Urban	687	73.2
	Rural	252	26.8
Educational level	Postgraduate	576	61.3
	High school	186	19.8
	Elementary school	67	7.1

	Undergraduate	55	5.9
	Illiterate	29	3.1
	Other	26	2.8
Occupation	Governmental	231	24.6
	Education	183	19.5
	Medical field	90	9.6
	Business and Finance	83	8.8
	Engineering and IT	68	7.2
	Communication and media science	45	4.8
	Other	44	4.7
	None	195	20.8
Insurance	No	552	48.8
	Yes	387	41.2
Have a chronic disease	No	840	62.9
	Yes	349	37.1
Type of chronic condition	Diabetes	135	38.6
	Hypertension	115	32.9
	Rheumatic disease	57	16.3
	Asthma	69	19.7
	Hypercholesterolemia	108	30.9
	Gout	38	10.8
	Osteo-arthritis	37	10.6
	Hypothyroidism	73	20.9
	Rheumatoid-arthritis	57	16.3
	Depression	24	6.9
	Coronary artery disease	36	10.3
Have had chicken pox	Yes	516	54.9
	No	423	45.1
Have heard about HZ	Yes	817	87.0
	No	122	13.0
Have heard about HZ vaccine	Yes	516	54.9
	No	423	45.1

Knowledge on Awareness Regarding HZ

Out of the 817 participants with a 'yes' response to the question, 'have you heard about HZ'? most of them (36.1%) believed that HZ was prevalent in the study area, while 30.0% answered 'do not know'. We noted that 0.1% participants did not respond to the question 'do you think that HZ is common in KSA'? (**Figure 1**). **Figure 2** demonstrates the sources of knowledge regarding HZ.

We observed that knowledge from the internet was the highest (24.1%), followed by the doctor (22.9%), and other (1.3%). Among the risk factors mentioned by these participants, 'immunodeficiency' was the most common (33.5%), while 'not having enough sleep' had the least response (1.8%). Other risk factors such as age, chronic disease, stress and unhealthy diet were indicated (**Figure 3**).

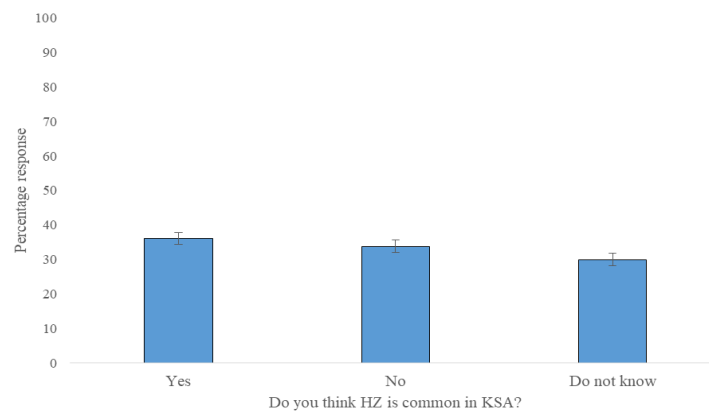


Figure 1. The percentage of participants' responses regarding how common HZ is in KSA

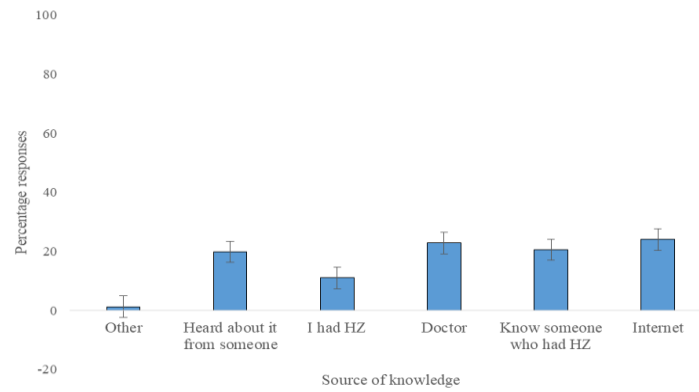


Figure 2. The percentage of participants' responses regarding the sources of knowledge about HZ.

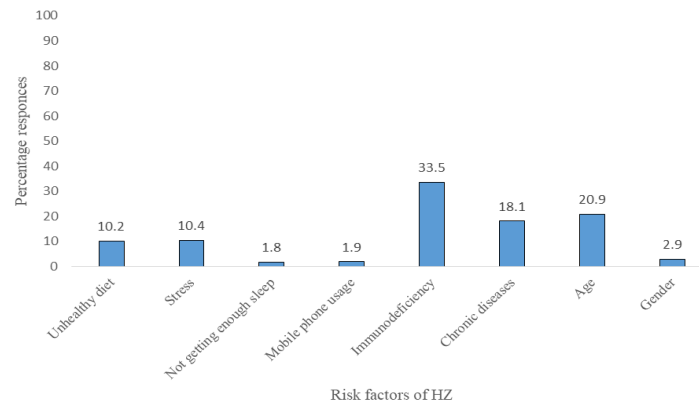


Figure 3. The percentage of participants' responses regarding the relevant risk factors of HZ

The factors associated with knowledge of HZ are presented in **Table 2**. Females showed a higher level of awareness (87.7%), compared to their male counterparts, but there was neither a statistically significant association with knowledge of HZ ($P=0.444$) nor its prediction ($P=0.445$), based on gender. Regarding age, the highest level of awareness (88.9%) was noted among participants between 61-65 years, while the least (78.2 %) was observed among those who aged >65 years. There was significant association between knowledge of HZ and age ($P=0.022$). Only age groups 50-60 and 61-65 years maintained

statistically significant prediction with AOR=1.96; 95% CI: 1.07, 3.58 and AOR: 95% CI: 1.22, 4.40; respectively. Participants residing in urban area recorded statistically significant higher level (91.2%) of knowledge of HZ, compared to those in the rural area ($P<0.0001$), and statistically predicted knowledge (AOR=3.58; 95% CI: 2.40, 5.35). Those with insurance had more knowledge of the virus than the participants without insurance ($P=0.015$), but could not predict knowledge (AOR=1.43; 95% CI: 0.94, 2.19). Despite that more (87.4%) respondents reported they had chicken pox, no significant association was identified (**Table 2**).

Table 2. Factors associated with participants' knowledge on awareness regarding HZ

Variable	Category	Awareness about HZ (n = 817)					
		Yes (%)	P-Value	COR (95 % CI)	P-Value	AOR (95 % CI)	P-Value
Gender	Male	312 (86.0)	0.444	-	-	-	-
	Female	505 (87.7)		1.16 (0.79, 1.71)	0.445	1.00 (0.67, 1.50)	0.998
Age (in years)	50 – 55	313 (87.7)	0.022	1.99 (1.16, 3.40)	0.012	1.65 (0.94, 2.89)	0.082
	56 – 60	234 (88.6)		2.18 (1.22, 3.89)	0.008	1.96 (1.07, 3.58)	0.029
	61 – 65	177 (88.9)		2.25 (1.21, 4.18)	0.010	2.31 (1.22, 4.40)	0.011
	> 65	93 (78.2)		-	-	-	-
Nationality	Saudi	633 (87.3)	0.611	1.12 (0.72, 1.75)	0.612	1.14 (0.72, 1.81)	0.579
	Non-Saudi	184 (86.0)		-	-	-	-
Place of	Urban	629 (91.2)	0.0001	3.69 (2.50 , 5.46)	0.0001	3.58 (2.40, 5.35)	0.0001

residence	Rural	188 (74.6)	-	-	-	-	-
Insurance	No	468 (84.8)	0.015	-	-	-	-
	Yes	349 (90.2)		1.65 (1.10, 2.48)	0.016	1.43 (0.94, 2.19)	0.095
Have had chicken pox	Yes	451 (87.4)	0.690	1.08 (0.74, 1.58)	0.690	1.08 (0.73, 1.61)	0.698
	No	366 (86.5)		-		-	

Perception of the Participants Regarding HZ

The perception of the participants about HZ is illustrated in **Figure 4**. On the item: If I get chicken pox, I am at more risk of getting shingles, the subjects who earlier stated that they were aware of HZ responded as follows: 39.9% (n = 326) 'don't know', 26.3% (n = 215) 'false' and 33.8% (n = 276) 'true', and the difference in the proportion of responses was statistically significant (P = 0.0001).

Regarding this item: I could get shingles if I come into contact with somebody who has it, the participants gave the following responses: 29.7% (n = 243) 'don't know', 32.1% (n = 263) 'false' and 38.1% (n = 311) 'true', which were significant (P=0.011). As per this item: There is no cure for shingles, the participants provided these responses: 32.0% (n = 300) 'don't know', 21.8% (n = 204) 'false' and 46.2% (n = 433) 'true', with differences that are statistically significant (P = 0.0001).

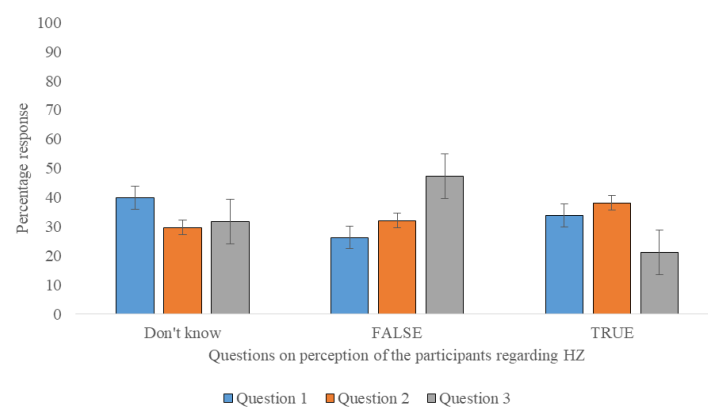


Figure 4. Perception of the participants regarding HZ. (a) Question 1 = If I get chicken pox, I am at more risk of getting shingles; (b) Question 2 = I could get shingles if I come into contact with somebody who it has; (c) Question 3 = There is no cure for shingles

Knowledge on Awareness Regarding HZ Vaccine

The factors associated with participants' knowledge on awareness about HZ vaccine are shown in **Table 3**. We observed that the following demonstrated a significant association with awareness of the vaccine: females (AOR=1.20; 95% CI: 0.91, 1.57), those aged 50 – 55 (AOR=1.77; 95% CI: 1.15, 2.72), Saudi citizens

(AOR=1.42; 95% CI: 1.04, 1.94), and urban dwellers (AOR=1.68; 95% CI: 1.25, 2.27). The percentage of participants' responses regarding the sources of knowledge about HZ vaccine are presented in **Figure 5**. Out of the 516 participants who were aware of HZ vaccine, the major source of knowledge was from doctors (26.2%), followed by internet (23.6%), and the least was from frequency modulation, FM (0.2%).

Table 3. Factors associated with participants' knowledge on awareness regarding HZ vaccine

Variable	Category	Awareness about HZ vaccine (n = 516)					
		Yes (%)	P-Value	COR (95 % CI)	P-Value	AOR (95 % CI)	P-Value
Gender	Male	185 (51.0)	0.051	-	0.051	-	0.198
	Female	331 (57.4)		1.30 (1.00, 1.69)		1.20 (0.91, 1.57)	
Age (in years)	50 – 55	215 (60.2)	0.014	1.95 (1.28, 2.97)	0.002	1.77 (1.15, 2.72)	0.009
	56 – 60	139 (52.7)		1.43 (0.93, 2.21)	0.105	1.33 (0.86, 2.08)	0.204
	61 – 65	110 (55.3)		1.59 (1.01, 2.52)	0.046	1.58 (0.99, 2.51)	0.055
	> 65	52 (43.7)		-	-	-	-
Nationality	Saudi	413 (57.0)	0.022	1.43 (1.05, 1.94)	0.023	1.42 (1.04, 1.94)	0.028
	Non-Saudi	103 (48.1)		-		-	
Place of residence	Urban	404 (58.8)	0.000	1.78 (1.33, 2.39)	0.000	1.68 (1.25, 2.27)	0.001
	Rural	112 (44.4)		-		-	

Insurance	No	229 (41.5)	0.000	-	0.030	1.25 (0.95, 1.63)	0.109
	Yes	287 (74.2)		1.34 (1.03, 1.74)			
Have had chicken pox	Yes	268 (51.9)	0.040	-	0.040	1.29 (0.99, 1.68)	0.060
	No	248 (58.6)		1.31 (1.01, 1.70)			

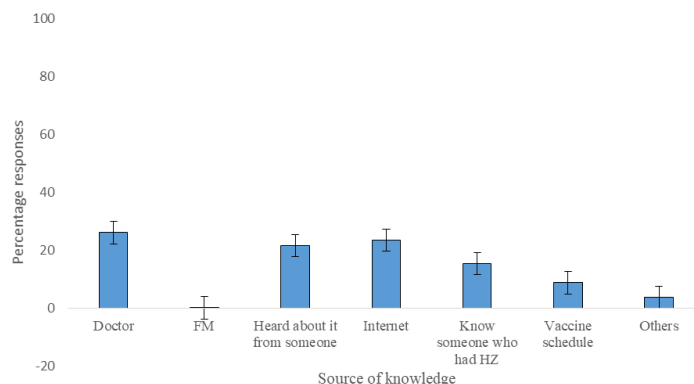


Figure 5. The percentage of participants' responses regarding the sources of knowledge about HZ vaccine. Note: FM – Frequency modulation

Perception of the Participants Regarding HZ Vaccine

The perception of the participants regarding HZ vaccine is shown in **Figure 6**. On the item: Shingles vaccine can reduce the incidence of disease by more than 50%, the participants who previously reported that they were aware of the vaccine responded thus: 28.7% (n = 148) 'don't know', 20.0% (n = 103) 'false' and 51.4% (n = 265) 'true', with significant statistical differences

($P < 0.0001$). For shingles vaccine can treat active shingles, the participants responded as follows: 38.2 % (n = 197) 'don't know', 23.6% (n = 122) 'false' and 38.4 % (n = 198) 'true', with significant statistical differences ($P < 0.0001$). In terms of the item: Shingles vaccine is not needed if the person already had chicken pox as a child, we recorded the following responses: 37.1% (n = 190) 'don't know', 37.3% (n = 191) 'false' and 26.2% (n = 135) 'true' ($P = 0.003$).

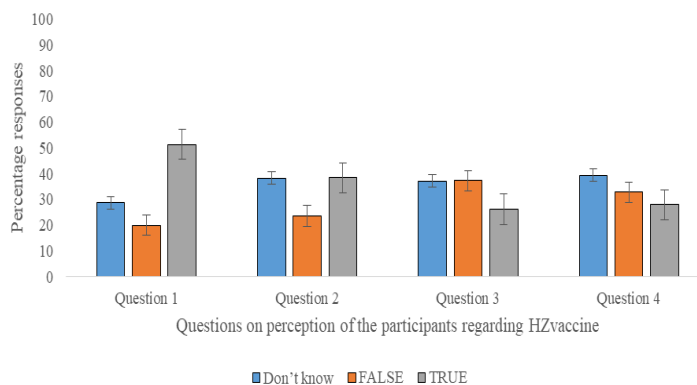


Figure 6. Perception of the participants regarding HZ vaccine. (a) Question 1 = Shingles vaccine can reduce the incidence of disease by more than 50%; (b) Question 2 = Shingles vaccine can treat active shingles; (c) Question 3 = Shingles vaccine is not needed if the person already had chicken pox as a child; (d) Question 4 = Shingles vaccine is no longer needed if the person already had shingles

With regards to this item: Shingles vaccine is no longer needed if the person already had shingles', 39.3 % (n = 203) responded 'don't know', 32.8 % (n = 169) 'false' and 27.9 % (n = 144) 'true', which showed significant statistical differences at $P = 0.006$. Majority (21.9%) of the respondents suggested avoiding hugs or handshake as a precautionary step, followed by those who advised

getting a vaccine (20.9%), and the least response was 'do nothing' (4.2%), as shown in **Figure 7**. All statements in **Table 4** had 'likely' as the median (Q2) response with the exception of 'I worry about the cost of the vaccine' with 'neutral' as the median (Q2) response; and these were statistically significant ($P < 0.0001$).

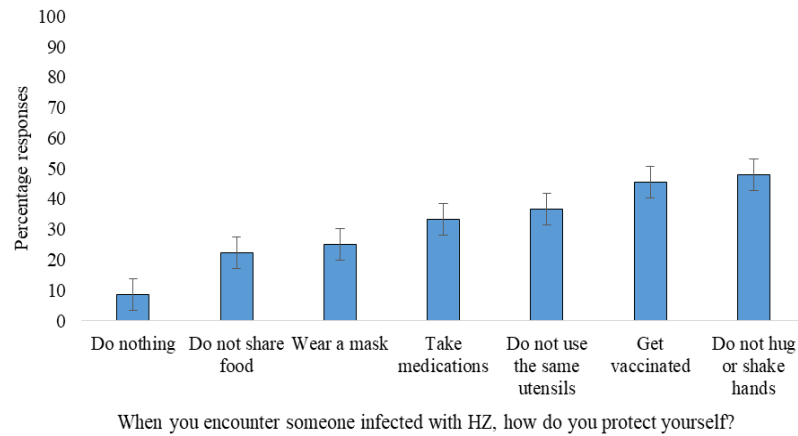


Figure 7. The percentage of participants' response about how to protect themselves

Table 4. Participants' perception regarding HZ prevention

Variable	Category	Number of responses (%)	Median response (50 th Percentile)s	P-value
I am worried about getting Shingles	Extremely unlikely	59 (6.3)	Likely	0.0001
	Unlikely	104 (11.1)		
	Neutral	208 (22.2)		
	Likely	325 (34.6)		
	Extremely likely	243 (25.9)		
Shingle has a significant effect on health	Extremely unlikely	24 (2.6)	Likely	0.0001
	Unlikely	138 (14.7)		
	Neutral	220 (23.4)		
	Likely	345 (36.7)		
	Extremely likely	212 (22.6)		
I am interested in knowing more about the disease	Extremely unlikely	13 (1.4)	Likely	0.0001
	Unlikely	98 (10.4)		
	Neutral	277 (29.5)		
	Likely	325 (34.6)		
	Extremely likely	226 (24.1)		
I am interested knowing about how to prevent it	Extremely unlikely	25 (2.7)	Likely	0.0001
	Unlikely	107 (11.4)		
	Neutral	200 (21.3)		
	Likely	347 (37.0)		
	Extremely likely	260 (27.7)		
I worry about the cost of the vaccine	Extremely unlikely	81 (8.6)	Neutral	0.0001
	Unlikely	184 (19.6)		
	Neutral	230 (24.5)		
	Likely	248 (26.4)		
	Extremely likely	196 (20.9)		
I would get the shingles vaccine if Doctor recommended it	Extremely unlikely	25 (2.7)	Likely	0.0001
	Unlikely	128 (13.6)		
	Neutral	210 (22.4)		
	Likely	313 (33.3)		
	Extremely likely	263 (28.0)		

Participants' Perception on the Use of the HZ Vaccine

Among the respondents, only 106 participants (11.3%) had received the HZ vaccine. The most frequently reported barriers to

get vaccinated were: not taking risks about the vaccine (22.4 %) and concerns about the possible side effects (22.4%). This was followed by 30.2%, who emphasised the importance of getting a comprehensive understanding of the vaccine, encompassing its

efficacy, potential side effects, and related information. Reducing the cost of vaccine, which was the least reported practice as per the third question was identified as an important factor by 11.9% of the participants (**Table 5**).

Table 5. Participants' perception on the use of the HZ vaccine

Variable	Category	Number of responses	Percentage
Ever had the HZ vaccine	Yes	833	82.4
	No	106	10.5
What would prevent you from getting the HZ vaccine?	I am not at risk because I am healthy	226	22.4
	I do not believe in vaccines	96	9.5
	I would rather get medicine when I get sick	118	11.7
	I am concerned about the side effect of the vaccine	226	22.4
	I did not know that the vaccine existed	158	15.6
	I believe it is a waste of money	38	3.8
	Not covered by insurance	23	2.3
	Other	43	4.3
What is the most important factor that would change your decision to receive the vaccine?	Reduce the cost of the vaccine	112	11.9
	Gaining a better understanding of the disease	251	26.7
	Gaining a better understanding of the vaccine (how effective it is side effect etc.)	284	30.2
	Recommendation by Doctor, Pharmacist, or other health care providers	292	31.1

The goal of this study as carried out in Saudi Arabia was to assess the knowledge of awareness and perception regarding HZ and its vaccine among individuals aged 50 and above. Significant gaps in knowledge and low vaccine uptake which has been trending steadily with global observations though presenting particular regional challenges is revealed by the findings here. HZ awareness in the chosen group of individuals was high at 87.0%, though with misconceptions regarding transmission and prevention of the disease. Knowledge about the shingles vaccine was finite, having only 54.9% awareness and an overall poor knowledge level in 63.9% of participants. These findings align with other studies done in Saudi Arabia, which as well reported limited awareness about HZ and its vaccine, though some differences existed according to the regions.

A certain study in Saudi Arabia presented a slightly higher awareness of the vaccine for shingles at 57.2%, which is quite different from the findings of present study that has presentation of poor knowledge in plurality. This suggests that certain regions dwindle in public knowledge and vaccine awareness which contrasts national awareness that may be moderately high. The record of vaccination rates in this study were also low at just 7.7%, reflecting the trends observed in the present study (Al-Orini *et al.*, 2023; AlMuammar *et al.*, 2023). However, a study conducted in the United States showed that the motivation to acquire the vaccination by participants was high, and it was strongly impacted by increasing knowledge about HZ and its vaccine (AlMuammar *et al.*, 2023).

The present study discovered that participants with chronic conditions had greater knowledge of shingles and its vaccine as compared to those without chronic conditions, and corroborates previous studies undertaken in the KSA and the United Arab Emirates, UAE (Roh *et al.*, 2015; Alhothali *et al.*, 2023). Similarly, another study in Saudi Arabia revealed that patients with high

blood pressure had the highest level of awareness of shingles and its vaccine (Alhothali *et al.*, 2023). According to the study conducted in UAE, patients with hypercholesterolemia were regarded to have the best level of knowledge on shingles and its vaccine (Al-Khalidi *et al.*, 2022). The higher level of knowledge of the disease and vaccination rate observed could be attributed to the targeted population of diabetes patients who might be more health conscious or have better access to healthcare information (Alhothali *et al.*, 2023).

A Saudi Arabian study showed that 80% of the participants had shingles awareness, but 74.0% did not recognise the connection between Varicella and shingles. This gap in understanding the full scope of the disease suggests a common area for improving public health education. The study also indicates that while 55.8% were familiar with shingles vaccine, there was a significant gap in vaccine uptake. Additionally, reluctance to take optimal vaccines was 28.1%, while majority demonstrated willingness to take the vaccine if recommended by a healthcare professional. This summarises the potential impact of healthcare provider recommendations on vaccine uptake (Alhothali *et al.*, 2023; de Koning *et al.*, 2024).

Furthermore, another Saudi Arabian study among diabetes patients in the Qassim region reported that 25.0% accepted shingles vaccine, with predictors being male gender, belief in vaccine effectiveness and awareness of higher shingles risk in immunocompromised individuals (Alhothali *et al.*, 2023). The foregoing also highlights the influence of healthcare provider advice on vaccine uptake. The findings of the present study provides an absolute contrast to international findings. In the UAE study, 64.3% of participants were aware of shingles, though many failed to recognize the link between chickenpox and shingles, reflecting our findings. Notably, being a female, an Arab national, or a healthcare professional, positively influenced HZ knowledge

as explored in the study. The low awareness of shingles vaccine reported in the UAE study is in consonance with our study, suggesting pervasive gaps in vaccine awareness across regions (Kain *et al.*, 2023).

In South Korean, a study reported a high shingles awareness and knowledge of shingles vaccination. This contrast our study findings, showing a compelling challenge in increasing public awareness. However, the discussed study also identified sociodemographic factors and socioeconomic status as influences of shingles awareness. Most individuals who were aware of shingles showed willingness to be vaccinated. Nevertheless, barriers such as perceived high costs and low risk perception led to a 60.2% acceptance rate (Yang *et al.*, 2015).

A Chinese study revealed varying levels of vaccine awareness and willingness to vaccinate, with the major barriers being cost concerns and lack of healthcare recommendations (Lin *et al.*, 2020). These factors align with our findings, where similar challenges contributed to low vaccine uptake. In the USA, a research involving participants aged 50 years and above gave considerable awareness of shingles and its vaccine, as over 68% of the study participants knew someone with shingles, and 13.3% of those aged 60 years and older had personal experience with the disease. This study reported that knowledge about shingles and its incidence was high. Television and internet ads were primary sources of vaccine information. Perception of vaccine side effects varied with age: 62.7% under 60 believed in side effects, contrasting with 39.2% of those aged 60 and above, and approximately 35.0% were unaware of the side effects (Baalbaki *et al.*, 2019).

These international insights emphasise the immediate need for comprehensive public health initiative to promote awareness, correct misconceptions and enhance shingles vaccination (Chang *et al.*, 2024; Wang *et al.*, 2024). Addressing specific demographic and cultural influences, targeted educational campaigns facilitated by healthcare providers, and overcoming financial barriers are the profound recommendations among others. To narrow the identified knowledge gaps, healthcare providers have to play key role in disseminating correct information about shingles and its vaccine. Designing interventions to address unique regional and demographic factors is vital for enhancing the impact of awareness campaigns. Likewise, efforts should be directed at dispelling misconceptions bordering on vaccine efficacy, taking care of cost concerns, and underscoring the importance of vaccine uptake, especially among high-risk populations.

Conclusion

The study contributes valuable insight in the knowledge and perception of shingles and its vaccine in KSA. The identified gaps in awareness and vaccine uptake underscore the need for targeted educational interventions to maximise understanding, and promote vaccination among the at-risk individuals. Healthcare professional's role is emphasised as pivotal to spreading accurate information and addressing misconceptions. This study summarises a significant gap in knowledge and low vaccine uptake among the target population in Saudi Arabia. It underlines the

importance of educational initiatives and awareness programmes to enhance understanding and acceptance of the shingles vaccine. Our findings can inform healthcare providers and policy makers in bringing up strategies to promote vaccination coverage, thereby improving public health outcomes in the country.

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