Knowledge, Attitudes, and Practices Regarding Herpes Zoster Vaccination Among Jizan Primary Healthcare Physicians: A Cross-sectional Survey

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Abstract

Objectives: To assess the knowledge levels, attitudes, practices, and associated factors regarding herpes zoster (HZ) vaccination among primary healthcare physicians in Jizan, Saudi Arabia.

Methods: A cross-sectional study was conducted in 2023 among 281 primary healthcare physicians in Jizan, Saudi Arabia. Data were collected using a self-administered questionnaire, which included a 15-point knowledge assessment scale and a Likert-type scale for attitudes and practices. Knowledge was deemed sufficient if the median score was achieved. Multivariate logistic regression analysis identified predictors of knowledge sufficiency.

Results: Of the 288 physicians approached, 281 participated (response rate: 97.6%). The mean age was 35.2 ± 8.4 years, with males comprising 58.4% (n = 164). Adequate knowledge of HZ vaccination was observed in 62.6% (n = 176) of participants. Years of experience (5–10 years) significantly predicted knowledge adequacy (OR = 2.70, 95% CI [1.05, 6.88], p = 0.038). Knowledge was significantly associated with gender (p = 0.038), education level (p = 0.027), and years of experience (p = 0.020), but not nationality (p = 0.325). Most physicians (71.6%) perceived the vaccine as safe, and 65.8% considered it a clinical priority; however, 47.3% cited time constraints as a barrier to vaccine recommendation.

Conclusions: While knowledge levels among primary healthcare physicians in Jizan were generally acceptable, gaps in vaccination practices persist. Experience was a significant determinant of knowledge sufficiency, whereas time constraints emerged as the primary barrier to vaccine recommendation. Targeted educational interventions and systemic adjustments to address time management challenges are recommended.

Keywords: Herpes Zoster, vaccination, healthcare providers, knowledge, attitudes, practices, Jizan, Saudi Arabia

Introduction

Herpes zoster (HZ), commonly known as shingles, is a significant global health problem, particularly among the elderly population.[1] Its prevalence varies across epidemiological studies but generally ranges from 3–5 cases per

1,000 individuals annually.[2] Among those aged 50 years and older, this rate rises significantly to between 8 and 12 cases per 1,000 person-years.[3] The condition results from the reactivation of the varicella-zoster virus (VZV), which remains dormant in sensory ganglia following primary varicella infection. Clinically, HZ manifests as a painful vesicular rash distributed along specific dermatomes on one side of the body.[4]

Beyond the acute phase, HZ has long-term complications, most notably post-herpetic neuralgia (PHN). PHN affects approximately 30% of patients and is characterized by chronic neuropathic pain that can persist for six months or longer, profoundly impacting quality of life and increasing healthcare costs.[1,5] The economic burden of HZ is substantial, with annual treatment costs reaching $1.1 billion in the United States and €1.7 billion across European Union countries.[6] These figures do not account for indirect costs, such as productivity losses, estimated to exceed $3 billion globally.[7,8]

The introduction of the recombinant zoster vaccine (RZV) has provided a highly effective preventive measure, with >90% efficacy across all age groups, including immunocompromised individuals.[9,10] In Saudi Arabia, the HZ vaccine is provided free of charge under the national healthcare system. However, it has not yet been integrated into the life course vaccination program, and vaccine coverage rates remain low, reflecting limited accessibility and awareness of its availability. Additionally, no formal national schedule for HZ vaccination exists.

In Saudi Arabia, the epidemiology of HZ presents unique challenges. Studies indicate a higher incidence of 4.7 cases per 1,000 person-years compared to global norms, likely due to demographic factors such as increased life expectancy and a growing population of immunocompromised individuals.[11] A survey by AlMuammar et al. revealed that while 57.2% of participants were aware of the shingles vaccine, only 7.7% had received it.[12] Furthermore, Alhazmi et al. found that 58% of older adults in the Jizan region had limited knowledge of HZ and its vaccination, with significant variations by age, education, and employment status.[13]

The Jizan region, with its population of 1.5 million and distinct socioeconomic and healthcare dynamics, warrants targeted research on HZ vaccination.[14,15] This study aims to assess the knowledge, attitudes, and practices of primary healthcare physicians in Jizan regarding HZ vaccination and identify factors influencing these dimensions. By addressing these determinants, this study seeks to inform educational interventions and policy recommendations to improve vaccination coverage.

Methods

This cross-sectional observational study was conducted in 2023 in the Jizan region, located in southwestern Saudi Arabia. The region has a population of approximately 1.5 million and is served by 168 primary healthcare centres (PHCCs) distributed across 14 administrative governorates.

The study targeted general practitioners actively engaged in primary healthcare services under the Jizan Health Directorate of the Ministry of Health. Participants included males and females of all nationalities. The sample size was calculated using a 95% confidence level and a 5% margin of error, with the formula:

$$n = SS/[1 + \{(SS - 1)/Pop\}]$$

$$\text{Where } SS = (Z^2 \times p \times q)/E^2$$

For Z=1.96, p=q=0.5, and E=0.05, This yielded a required sample size of 240, which was increased by 20% to account for non-respondents, resulting in a target of 288 participants. Ultimately, 281 healthcare professionals completed the survey, yielding a response rate of 97.6%.

Stratified random sampling was employed to ensure proportional representation from all 14 governorates in Jizan. A comprehensive list of primary healthcare physicians was obtained from the Jizan Health Cluster. Simple random sampling was then applied to select participants from each governorate.

Data collection was conducted online through a web-based questionnaire distributed via WhatsApp, a widely used social media platform in Saudi Arabia. The questionnaire was developed following an extensive literature

review and expert consultation and was based on a validated tool from a previous study by Elkin ZP et al.[16] The questionnaire comprised three main sections: demographic variables, knowledge scores on HZ and its vaccination, and beliefs and attitudes toward vaccination practices. The knowledge assessment included 15 questions, with each correct response awarded one point (range: 0–15). The median score was used as the threshold to classify knowledge as either adequate or inadequate. The section on attitudes and beliefs utilized a Likert scale to evaluate factors such as vaccination practices, barriers, priorities, and implementation challenges. The validity, reliability, and internal consistency of the questionnaire (e.g., Cronbach's alpha) were addressed, and appropriate citations were included where applicable.

The collected data were analyzed using IBM SPSS version 26.0. The data were summarized using descriptive statistics. Categorical variables were summarized as frequencies and percentages, and continuous variables as means, standard deviations, ranges, and medians with interquartile ranges. Demographic characteristics associated with knowledge level were determined using the chi-squared test. Multivariate logistic regression analysis was performed to determine the factors associated with adequate knowledge, and the results were presented as adjusted odds ratios (aORs) and 95% confidence intervals. Statistical analyses were considered significant at a p-value of less than 0.05.

All procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation and the Helsinki Declaration of 1975, as revised in 2000. Moreover, before starting the study, we received ethical approval from the Research Ethics Committee of Jazan University (approval no. REC-45/09/1032). Informed consent was obtained from each subject during enrollment. The study was conducted online because all activities involved in producing data occur over the Internet. Therefore, each participant provided consent through an appropriate channel before answering the questionnaire. The questionnaire informed participants about the voluntary nature of their participation (which could stop at any point without any negative consequences). Confidentiality and anonymity of their responses were ensured. Data were collected and saved on a password-protected server to which only the members of the research team had access. Any information obtained was used for research purposes only and was reported in aggregate form such that no individual could be identified.

Results

The sample consisted of 281 healthcare professionals [Table1]. The age distribution exhibited a very equitable mix among the younger and middle-aged cohorts, with 26.7% (n = 75) in the 25–30-year age range, 27.0% (n = 76) in the 31–35-year age range, 21.0% (n = 59) in the 36–40-year age range, and 18.5% (n = 52) in the 41–50-year age range [Figure 1]. The least represented age category was over 50 years, constituting 6.8% (n = 19) of the sample. The gender distribution indicated a slight majority, with 58.4% (n = 164) male and 41.6% (n = 117) female participants [Figure 2].

Table 1: Demographic Characteristics of Healthcare Professionals.

Demographic Characteristics		n	%
Age	25-30	75	26.7%
	31-35	76	27.0%
	36-40	59	21.0%
	41-50	52	18.5%
	>50	19	6.8%
Gender	Male	164	58.4%
	Female	117	41.6%
Education	General practitioner	120	42.7%
	Family medicine junior resident	45	16.0%
	Family medicine senior resident	16	5.7%
	Family medicine specialist	62	22.1%
	Family medicine consultant	38	13.5%
Nationality	Saudi	171	60.9%
	Non-Saudi	110	39.1%
Years of Experience	<5	102	36.3%
	5-10	85	30.2%
	>10	94	33.5%

Abbreviations: n = number. % = percentage

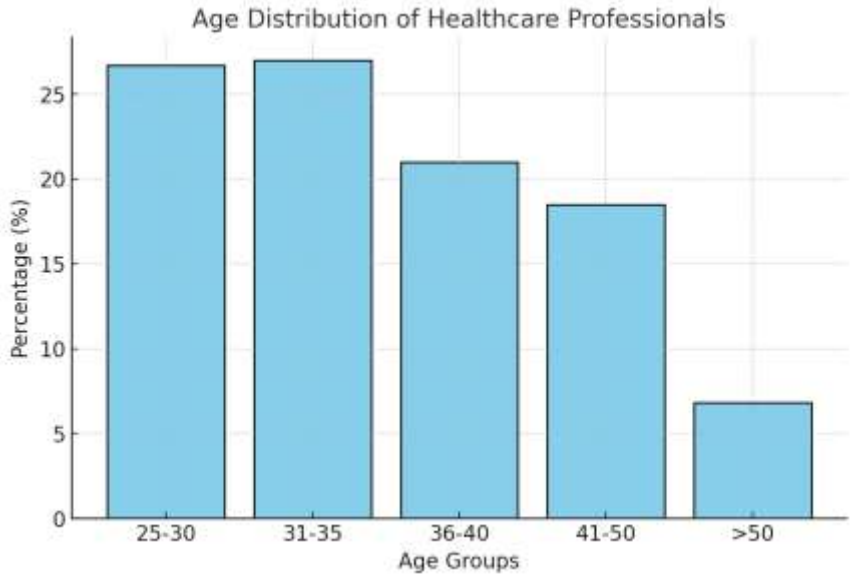

Figure 1: Bar chart for age distribution shows the percentage distribution of participants across different age groups.

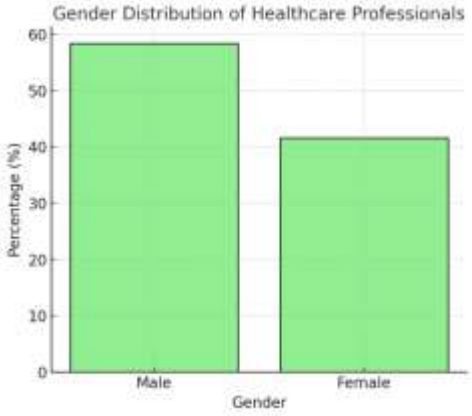

Figure 2: Bar chart for gender distribution highlights the proportion of male and female participants.

The predominant educational background was general practitioner (42.7%, n = 120), followed by family medicine specialist (22.1%, n = 62). Junior residents in family medicine constituted 16.0% (n = 45) of the sample, while family medicine consultants accounted for 13.5% (n = 38) of the sample. The smallest cohort comprised senior family medicine residents, accounting for 5.7% (n = 16). Nationality statistics indicated that 60.9% (n = 171) of the participants were Saudi nationals, while 39.1% (n = 110) were non-Saudi.

Individuals with less than five years of experience represented 36.3% (n = 102) of the sample, whereas 30.2% (n = 85) had 5-10 years of experience, and 33.5% (n = 94) had more than 10 years of experience. This varied sample offers an extensive representation of healthcare workers from various career stages and backgrounds.

This research assessed healthcare practitioners' knowledge of HSV vaccination using a 15-question evaluation. Each accurate response received one point, yielding a potential score range of 0–15. The median score was used as the threshold to classify the participants' knowledge as either adequate or inadequate. The results revealed that 62.6% (n = 176) of individuals had sufficient knowledge, while 37.4% (n = 105) showed inadequate knowledge [Table 2]. The average score was 8 (SD = 2), with a range of 1 to 15 and a median of 8 (IQR: 7-10) [Figure 3].

Table 2: Knowledge Assessment of Healthcare Professionals Regarding HSV Vaccine.

Knowledge	n	%
Insufficient	105	37.4%
Sufficient	176	62.6%
Mean (SD)/Range, Median	8(2)/ 1-15	8 (7-10)

Abbreviations: n = number. % = percentage. SD = standard deviation; IQR = interquartile range.

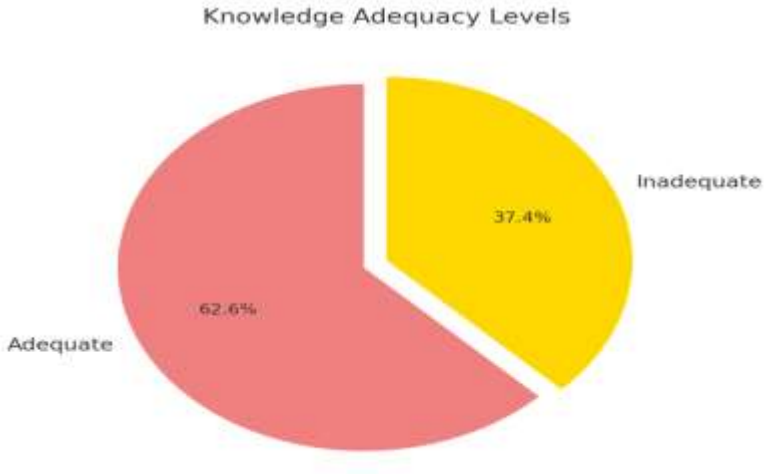

Figure 3: Pie chart for knowledge levels displays the proportion of participants with adequate versus inadequate knowledge of HZ vaccination.

In Table 3, Concerning the practicalities of vaccine administration, most individuals (n = 191, 68%) contended that storage constraints do not render HZ vaccination challenging to utilize. Similarly, 75.1% (n = 211) opposed the notion that the processes for ordering and administering are overly complex. The data indicate that logistical issues are not significant obstacles to HZ immunization for most healthcare practitioners.

Table 3: Healthcare Professionals' Attitudes and Perceptions Towards Herpes Zoster Vaccination.

Attitudes and Perceptions Towards HZ Vaccination		N	%
Storage requirements make the HZ vaccine difficult to use	Strongly disagree	109	38.8%
	Somewhat disagree	82	29.2%
	Neutral	3	1.1%
	Somewhat agree	73	26.0%
	Strongly agree	14	5.0%
The procedures for ordering and administering the HZ vaccine in my health care practice setting are too complicated	Strongly disagree	132	47.0%
	Somewhat disagree	79	28.1%
	Somewhat agree	59	21.0%
	Strongly agree	11	3.9%
HZ vaccination rates are lower than they should be because physicians are not aware of the recommendations	Strongly disagree	78	27.8%
	Somewhat disagree	78	27.8%
	Somewhat agree	101	35.9%
	Strongly agree	24	8.5%
I just have too much else to focus on with my patients to find time to recommend the HZ vaccine	Strongly disagree	75	26.7%
	Somewhat disagree	73	26.0%
	Somewhat agree	102	36.3%
	Strongly agree	31	11.0%
All non-immunocompromised patients 50 yrs of age and older should be vaccinated	Strongly disagree	45	16.0%
	Somewhat disagree	54	19.2%
	Somewhat agree	64	22.8%
	Strongly agree	118	42.0%
Healthy patients are not really at risk for problems from shingles	Strongly disagree	128	45.6%
	Somewhat disagree	93	33.1%

	Somewhat agree	49	17.4%
	Strongly agree	11	3.9%
Patients get vaccinated when their doctor recommends it	Strongly disagree	43	15.3%
	Somewhat disagree	77	27.4%
	Somewhat agree	93	33.1%
	Strongly agree	68	24.2%
Treatment for shingles is so effective that prevention is not a high priority	Strongly disagree	144	51.2%
	Somewhat disagree	61	21.7%
	Somewhat agree	57	20.3%
	Strongly agree	19	6.8%
My patients have health issues that take precedence over reducing the risk or severity of shingles	Strongly disagree	67	23.8%
	Somewhat disagree	111	39.5%
	Somewhat agree	82	29.2%
	Strongly agree	21	7.5%
My elderly patients have so many co-morbidities that I worry about how the zoster vaccine might affect them	Strongly disagree	90	32.0%
	Somewhat disagree	85	30.2%
	Somewhat agree	81	28.8%
	Strongly agree	25	8.9%
HZ vaccination is an important clinical priority for my patients	Strongly disagree	42	14.9%
	Somewhat disagree	54	19.2%
	Somewhat agree	86	30.6%
	Strongly agree	99	35.2%
Pneumococcal vaccination is an important clinical priority for my patients Influenza vaccination is an important clinical priority for my patients	Strongly disagree	40	14.2%
	Somewhat disagree	60	21.4%
	Somewhat agree	76	27.0%
	Strongly agree	105	37.4%
Preventive recommendations from organizations like the Advisory Committee on Immunization Practices of the CDC are an important determinant of my vaccination practice	Strongly disagree	37	13.2%
	Somewhat disagree	58	20.6%
	Somewhat agree	77	27.4%
	Strongly agree	109	38.8%
The HZ vaccine, when given appropriately, is safe	Strongly disagree	28	10.0%
	Somewhat disagree	52	18.5%
	Somewhat agree	71	25.3%
	Strongly agree	130	46.3%
Post-hereptic neuralgia is very debilitating for many patients	Strongly disagree	37	13.2%
	Somewhat disagree	66	23.5%
	Somewhat agree	78	27.8%
	Strongly agree	100	35.6%

Abbreviations: n = number. % = percentage. HZ = Herpes Zoster; CDC = Centers for Disease Control and Prevention

Temporal limitations and conflicting priorities are critical issues. Approximately 47.3% of the responders (n = 133) concurred that their patient responsibilities precluded them from recommending HZ vaccination. Furthermore, 36.7% (n = 103) concurred that their patients were concerned about mitigating shingle danger or severity.

Awareness and perception of vaccination recommendations also influence outcomes. A significant percentage of responders (n = 125, 44.4%) indicated that HZ immunization rates were suboptimal because of physicians' insufficient understanding of the guidelines. Notably, 66.2% (n = 186) concurred those preventative recommendations from entities such as the CDC's Advisory Committee on Immunization Practices significantly influenced immunization behavior.

Concerning the significance of HZ immunization, 64.8% (n = 182) confirmed that all non-immunocompromised individuals aged ≥ 50 years should receive the vaccine. Furthermore, 65.8% (n = 185) confirmed that HZ immunization was a significant clinical priority for patients. The safety and efficacy of HZ vaccination have been widely regarded as positive. A substantial majority (n = 201, 71.6%) concurred that HZ

vaccination, when administered correctly, was safe. Furthermore, 72.9% (n = 205) opposed the notion that Shingle therapy is adequate to render prevention a low priority.

Opinions were notably divided on patient vaccination upon physician recommendation, with 57.3% (n = 161) agreeing and 42.7% (n = 120) disagreeing. This indicates that, although medical recommendations are significant, additional factors may affect patient decision-making. A significant majority (n = 221, 78.7%) rejected the notion that healthy individuals are not at risk of complications from shingles, demonstrating a robust comprehension of the possible consequences of the disease.

Regarding proactive vaccination practices, most healthcare professionals (n = 206, 73.3%) disagreed that they mostly only administered the HZ vaccine when patients requested it (42.3% strongly, 31.0% somewhat). Patient interest in the HZ vaccine appeared to be a significant factor. More than half of the respondents (n = 158, 56.2%) agreed that their older patients were not interested in the zoster vaccine (47.3% somewhat, 8.9% strongly) [Table 4].

Table 4: Healthcare Professionals' Self-Reported Practices.

Self-Reported Practices		n	%
I mostly only give the HZ vaccine when patients request it	Strongly disagree	119	42.3%
	Somewhat disagree	87	31.0%
	Somewhat agree	64	22.8%
	Strongly agree	11	3.9%
My patients have trouble getting access to Zoster vaccine	Strongly disagree	75	26.7%
	Somewhat disagree	102	36.3%
	Somewhat agree	88	31.3%
	Strongly agree	16	5.7%
My older patients are not interested in Zoster vaccine	Strongly disagree	40	14.2%
	Somewhat disagree	83	29.5%
	Somewhat agree	133	47.3%
	Strongly agree	25	8.9%
I closely follow CDC (Advisory Committee on Immunization Practices) guidelines in making vaccination decisions for my patients	Strongly disagree	29	10.3%
	Somewhat disagree	53	18.9%
	Somewhat agree	102	36.3%
	Strongly agree	97	34.5%
I know how to order the Zoster vaccination within my practice environment	Strongly disagree	27	9.6%
	Somewhat disagree	60	21.4%
	Somewhat agree	91	32.4%
	Strongly agree	103	36.7%
It is pretty easy within my practice environment to get patients the HZ vaccine	Strongly disagree	29	10.3%
	Somewhat disagree	66	23.5%
	Somewhat agree	106	37.7%
	Strongly agree	80	28.5%

Abbreviations: n = number. % = percentage. HZ = Herpes Zoster; CDC = Centers for Disease Control and Prevention

Access to the HZ vaccine did not seem to be a major barrier for most patients, with 63% (n = 177) of healthcare professionals disagreeing that their patients had trouble accessing the Zoster vaccine (26.7% strongly, 36.3% somewhat). Moreover, 66.2% (n = 186) agreed that it was easy within their practice environment to obtain patients with the HZ vaccine (37.7% somewhat, 28.5% strongly). Healthcare professionals generally reported being knowledgeable about vaccine ordering procedures, with 69.1% (n = 194) agreeing that they know how to order the Zoster vaccination within their practice environment (32.4% somewhat, 36.7% strongly). Adherence to official guidelines was relatively high, with 70.8% (n = 199) of respondents agreeing that they closely follow the Advisory Committee on Immunization Practices (CDC) guidelines in making vaccination decisions for their patients (36.3% somewhat, 34.5% strongly).

In Table 5, Age was significantly correlated with the knowledge level (p = 0.050). The highest percentage of individuals with sufficient knowledge was in the 31-35 age group (n = 51, 29.0%), followed by the 25-30 age

group (n = 40, 22.7%). Professionals aged over 50 constituted a small yet significant segment of those with sufficient knowledge (n = 17, 9.7%), in contrast to only 1.9% (n = 2) under the insufficient knowledge category.

Table 5: Demographic Characteristics and Their Association with Healthcare Professionals' Knowledge of Herpes Zoster Vaccination.

Factors		Knowledge				p-Value
		Insufficient		Sufficient		
		n	%	n	%	
Age	25-30	35	33.3%	40	22.7%	0.050
	31-35	25	23.8%	51	29.0%	
	36-40	22	21.0%	37	21.0%	
	41-50	21	20.0%	31	17.6%	
	>50	2	1.9%	17	9.7%	
Gender	Male	53	50.5%	111	63.1%	0.038
	Female	52	49.5%	65	36.9%	
Education	General practitioner	51	48.6%	69	39.2%	0.027
	Family medicine junior resident	22	21.0%	23	13.1%	
	Family medicine senior resident	6	5.7%	10	5.7%	
	Family medicine specialist	19	18.1%	43	24.4%	
	Family medicine consultant	7	6.7%	31	17.6%	
Nationality	Saudi	60	57.1%	111	63.1%	0.325
	Non-Saudi	45	42.9%	65	36.9%	
Years of Experience	<5	49	46.7%	53	30.1%	0.020
	5-10	27	25.7%	58	33.0%	
	>10	29	27.6%	65	36.9%	

Abbreviations: n = number. % = percentage. p = probability value

Gender was strongly correlated with the knowledge level (p = 0.038). Male participants were more likely to possess adequate knowledge (n = 111, 63.1%) than were female participants (n = 65, 36.9%). Amount of education showed a strong correlation with knowledge (p = 0.027). General practitioners constituted the predominant group in both knowledge categories, although they exhibited a greater number of individuals with inadequate knowledge (n = 51, 48.6%) than with sufficient knowledge (n = 69, 39.2%). Family medicine consultants exhibited a significant disparity, including 17.6% (n = 31) of those with sufficient knowledge compared with just 6.7% (n = 7) of those with inadequate understanding. Nationality was not significantly correlated with the knowledge level (p = 0.325). Saudi citizens constituted the majority in both knowledge categories, with 57.1% in the inadequate category and 63.1% in the sufficient category.

Years of experience showed a notable correlation with knowledge level (p = 0.020). Individuals with more than ten years of experience were more likely to possess adequate knowledge (n = 65, 36.9%) than those with inadequate knowledge (n = 29, 27.6%). In contrast, professionals with less than 5 years of experience constituted the predominant category (n = 49, 46.7%) among those with inadequate knowledge.

In the multivariate logistic regression analysis, years of experience emerged as the only significant factor; with professionals having 5-10 years of experience showed significantly higher odds of having sufficient knowledge (aOR = 2.700, 95% CI [1.058, 6.889], p = 0.038) than those with less than 5 years of experience. The remaining demographic factors did not significantly predict good knowledge [Table 6].

Table 6: Demographic Predictors of Good Knowledge.

Demographic Predictors of Good Knowledge	B	p-Value	aOR	95% C.I.for aOR	
				Lower	Upper
Age, 25-30 years			Reference Category		
31-35	-.051	.909	.951	.400	2.257
36-40	-.266	.668	.767	.227	2.586

41-50	-.122	.863	.885	.219	3.569
>50	1.371	.180	3.938	.530	29.266
Gender, Female	-.434	.108	.648	.381	1.101
Education, General Practitioner			Reference category		
Family medicine junior resident	-.086	.829	.917	.420	2.005
Family medicine senior resident	.246	.669	1.279	.414	3.948
Family medicine specialist	.368	.336	1.445	.683	3.056
Family medicine consultant	.396	.511	1.486	.456	4.842
Nationality, non-Saudi	-.779	.117	.459	.173	1.214
Years of Experience, <5			Reference category		
5-10	.993	.038	2.700	1.058	6.889
>10	1.148	.069	3.151	.913	10.868

Abbreviations = regression coefficient; aOR = adjusted Odds Ratio; CI = Confidence Interval; p = probability value; Ref = reference category.

Discussion

The current survey revealed that 62.6% of physicians were aware of the HZ vaccination, indicating that a significant portion of the medical community is aware of the vaccine's potential role in preventing shingles. However, 37.4% may lack adequate knowledge about this vaccination, which could affect patient care and public health efforts. A Makkah study found that a significant majority (80.4%) were aware of shingles, and 88.2% had heard about the vaccine.[15] In a survey of Korean physicians, it was found that the majority were knowledgeable about HZ and its vaccine.[17] This indicates that a substantial proportion of physicians are well-informed about the vaccine.

Our findings indicate that physicians with 5–10 years of experience are significantly more likely to have adequate knowledge of HZ vaccination. This aligns with previous studies showing that greater professional experience and higher education levels are associated with better awareness of HZ and its vaccines.[18,19] This underscores the importance of targeted educational initiatives to enhance knowledge, particularly for less experienced physicians.

The study revealed that while most physicians demonstrated adequate knowledge of HZ vaccination, significant gaps remain. Notably, 37.4% lacked sufficient awareness, underscoring the need for targeted educational interventions. Strategies such as incorporating HZ vaccination training into continuous professional development programs can address these gaps.

Gender Differences: Gender disparities were observed in the study, with male physicians demonstrating higher knowledge levels (63.1%) compared to their female counterparts (36.9%)($p = 0.038$).[15,20] This finding contrasts with some international studies where female physicians often exhibit higher knowledge scores.[19] The observed difference may be influenced by regional sociocultural factors, disparities in professional development opportunities, or varying roles within healthcare settings. Addressing these differences through equitable access to training and awareness programs is essential for bridging the gap.

Saudi physicians typically counsel patients rather than administer vaccines directly. This distinction highlights the importance of equipping physicians with effective counseling tools to improve patient engagement. Addressing misconceptions about vaccine safety and efficacy is critical, as is streamlining the vaccination process within PHCCs.

Although storage requirements were not a barrier in this study, ensuring robust cold chain management is essential for vaccine efficacy. Future research should explore longitudinal impacts of interventions on vaccination rates and address gender disparities in knowledge levels to strengthen healthcare delivery.

This study identified several major barriers to vaccination implementation. First, time constraints meant that 47.3% of physicians could not place a recommendation for the shingles vaccine within their patient responsibilities. This finding is supported by many studies reporting that primary care physicians have inadequate time to discuss vaccination.[21,22]

In a study by Williams et al., 45% of healthcare providers reported not having enough time for vaccination, which supports the general trend detected in the healthcare sector.[22] In Saudi Arabia, primary healthcare physicians are involved in both counseling patients about vaccinations and administering vaccines. However, they could face time constraints in managing both tasks effectively, which might influence vaccination practices and uptake.

Although 71.6% of physicians believed the vaccine to be safe and 65.8% believed the vaccine to be clinically relevant, almost half (47.3%) of physicians saw time constraints as a barrier to recommending the vaccine. This gap between knowledge and practice has been recorded as an important implementation gap in other health care systems. Our study showed that the supply chain requirements and ordering procedures for the shingles vaccine at Primary Healthcare Centers (PHCs) did not pose a significant barrier; 68% of the physicians disagreed that these constraints made the use of the shingles vaccine difficult. This finding points to a variation from many other studies conducted in developing countries on cold chain management and storage issues. Katherine Schafer et al.,[24] reported that the vaccine was not available in their practice setting, with half the participants stating that providers refer patients to outside pharmacies or to other practice settings for vaccine administration. Concerns regarding reimbursement and storage requirements were noted by 40% of providers, whereas 80% indicated that concerns regarding the safety and efficacy of the vaccine were not a barrier to vaccination.

Patient interest was rated as important, with 56.2% of healthcare providers claiming that older patients are less interested in the shingle vaccine. In addition, 57.3% of the patients were willing to accept vaccination if recommended by their physician. Therefore, this supports the fact that a physician's recommendation remains an effective avenue through which vaccination can be promoted. Several other studies support this same.[25,26] In the current study, which was highlighted by 66.2% of respondents, the dependency of vaccination behavior on professional guidelines shows that it is greatly influenced by recommendations such as those of the Advisory Committee on Immunization Practices. Therefore resonates with the findings, adherence to professional guidelines is positively correlated with vaccination rates and patient health outcomes.[27,28]

The perception of the influence of the level of education on the knowledge score ($p = 0.027$) is pertinent and applicable in the planning of programs for the continuous professional development of these healthcare providers. The proportion of general practitioners with adequate knowledge (17.6%) was significantly higher than that of those with inadequate knowledge (6.7%), and this special training thus contributes significantly to improving competence regarding vaccinations. This finding also agrees with other studies that found improved vaccination knowledge and practice as outcomes of specialized medical training.[29,30] The fact that experience and knowledge are tightly coupled might mean that there should be more investment in training and support for physicians.

This study has certain limitations. First, the reliance on self-reported data introduces the potential for response and social desirability biases, where participants may overstate their knowledge or practices. Second, the generalizability of the findings is limited to the Jazan region and may not represent healthcare professionals in other regions of Saudi Arabia. Despite these limitations, the study provides valuable insights into HZ vaccination practices among primary healthcare physicians.

Conclusion

This study highlights that while 62.6% of physicians demonstrated adequate knowledge of HZ vaccination, significant gaps persist in practice due to barriers such as time constraints and limited patient engagement. Experience, particularly among physicians with 5-10 years in practice, emerged as a key determinant of knowledge sufficiency. While storage and logistical challenges were not prominent, addressing misconceptions, enhancing patient interest, and integrating vaccination counseling into routine practice remain critical. Future research should focus on developing targeted training programs, addressing identified gender disparities, and expanding the study scope to other regions for broader applicability. Additionally, efforts should aim to improve time management and patient engagement to optimize HZ vaccination rates and overall healthcare delivery.

Conflicts of interest

There are no conflicts of interest.

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