



Full Length Research Article

Advancements in Life Sciences – International Quarterly Journal of Biological Sciences

ARTICLE INFO

Open Access



Date Received:
20/10/2024;
Date Revised:
05/01/2025;
Available Online:
31/08/2025;

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How to Cite:

Alshrari AS (2025).
Evaluation of the General
Population's Knowledge,
Attitudes, and Practices
about Herpes Zoster
Vaccination in the Northern
Border and Al-Jouf Region of
Saudi Arabia. Adv. Life Sci.
12(2): 393-398.

Keywords:

Shingles; Herpes Zoster;
Vaccine; Northern Border
Region; Al-Jouf; Saudi
Arabia

Evaluation of the General Population's Knowledge, Attitudes, and Practices about Herpes Zoster Vaccination in the Northern Border and Al-Jouf Region of Saudi Arabia

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Abstract

Background: The knowledge, attitude, and practice (KAP) of the general population concerning HZ and its vaccine are not well established in many regions of Saudi Arabia, including the Northern Border Region of Saudi Arabia (NBRSA) and Al-Jouf Region of Saudi Arabia (AJRSA). Accordingly, this study intended to evaluate the KAP of the individuals residing in the NBRSA and AJRSA.

Methods: The data of this cross-sectional investigation was collected employing an online survey questionnaire through Google Forms. The questionnaire comprised questions related to demography and KAP of the general population of NBRSA and AJRSA about HZ and HZ vaccination. The data was collected and the significance of the results was analyzed by utilizing SPSS version 21 software ($p < 0.05$ = significant result).

Results: The study comprised 483 participants from the NBRSA (50.72%) and AJRSA (49.27%). Most of the participants were from 40-45 (69.56%) years of age; females (60.86%); Saudi nationals (94.20%); university graduates (52.17%); belonged to the non-health sector (59.42%); and were not suffering from any chronic disease (78.26%). A majority of the participants (> 50%) had poor awareness about HZ and HZ vaccine. An appreciable number of participants (68.11%) were eager to learn more about HZ. The main source of information for HZ was the internet (46.37%) for most of the individuals.

Conclusion: There is a considerable information gap as well as a low HZ vaccination rate among the people of NBRSA and AJRSA warranting initiating educational and awareness programs in these regions.



Introduction

Herpes zoster (HZ; Shingles) follows when the dormant varicella-zoster virus (VZV; the causative virus for chickenpox) reactivates in the body. Chickenpox (Varicella) happens in children, whereas HZ strikes in adults or the elderly. Varicella (chickenpox) happens in children while HZ strikes in the elderly [1,2]. The HZ is characterized by the prodromal phase (itching in the localized area; fatigue; sensitivity in the affected area), rash, blisters, pain, fever, chill, and headache. The untreated HZ has serious complications including postherpetic neuralgia, HZ ophthalmicus; Ramsay Hunt Syndrome; encephalitis; meningitis; infected blisters; scarring, or skin discoloration [3,4].

HZ occurs 1.2 to 3.4 per 1000 healthy people per year and 3.9 to 11.8 per 1000 patients per year in those over 65. No seasonal fluctuation is observed in HZ, and recurrences are especially common in immunosuppressed patients [5]. The incidence of HZ in Saudi Arabia is not completely established. However, reports suggest that HZ prevalence is increasing in Saudi Arabia. The severity and increasing prevalence of HZ is mandating vaccination drives against HZ [6,7].

HZ and its complications can be prevented safely and effectively with the HZ vaccination. Accordingly, HZ vaccination is vital to public health. The prophylactic HZ vaccine licensed in Saudi Arabia is SHINGRIX. Saudi Arabia offers this vaccine free to anyone 50 and older [8,9]. However, studies have indicated that various factors affect the acceptability of vaccines among the general public [10,11]. The importance of HZ vaccination is well documented [8,9]. Some studies have been done in Saudi Arabia regarding HZ vaccination [7,9,11-16]. However, none of the studies are done in the Northern Border Region of Saudi Arabia (NBRSA) and Al-Jouf Region of Saudi Arabia (AJRSA). This fact was evident from literature searches on different databases (PubMed, Google Scholar, and Sci-Finder) utilizing different keywords (Shingles, Herpes, and Zoster) in combination with other keywords (Saudi, Arabia, Northern Border, and Aljouf), indicating that the knowledge, attitude, and practice (KAP) of the general population concerning HZ and its vaccine are not established in NBRSA and AJRSA. Accordingly, this investigation intended to ascertain the KAP of the individuals residing in the NBRSA and AJRSA and to fill the existing gap in the literature.

Methods

Study design

This cross-sectional study was conducted in NBRSA and AJRSA from August 1, 2024, to September 30, 2024. The studied areas of NBRSA comprised Arar, Rafha, Turaif, and, Al-Uwayqilah, whereas AJRSA comprised

Al-Jouf city. These regions were selected because of their population size and the absence of any published study on the titled topic. The participants (N = 483) of the study were the general public of NBRSA and AJRSA with an age of 40 years and above (the high-risk population). People less than 40 years of age were excluded from this study. There were no other exclusion criteria. The approximate population of NBRSA and AJRSA is about 1200000. Accordingly, the estimated sample size (385) was calculated by Raosoft [16].

Data Collection

The data was collected employing an online survey questionnaire through Google Forms. The online questionnaire was prepared in alignment with similar studies conducted in different parts of Saudi Arabia [7,9,11-16]. The questionnaire comprised questions related to demography (Table 1), knowledge (Table 2), and attitude/practice (Table 3) of the general population of NBRSA and AJRSA about the HZ vaccination. The link to the Google Forms was shared with the general population of the NBRSA and AJRSA through electronic means. The participants were asked to answer the questionnaire with their consent only.

Analysis of the data

The final results were compiled in an Excel sheet and the statistical analysis was carried out utilizing SPSS version 21 software ($p < 0.05$ = significant result). The total number of participants (N = 483) was taken as 100% and responses to the questionnaire were calculated in its comparison (Table 1, Table 2, and Table 3). For a better understanding, the responses for "strongly agree" and "agree" were combined into a single 'Agree' category. Similarly, the responses for "strongly disagree" and "disagree" were combined into a single 'Disagree' category. The participants were asked to select more than one option in some questions. Such responses have been compiled as "Two or more [options] as mentioned above" for a better understanding and clarity.

Ethical consideration

This cross-sectional study is an online anonymous survey regarding the titled study. According to the institutional policy, ethical approval was not mandatory for this survey and study.

Results

The study comprised 483 participants from the NBRSA (245; 50.72%) and AJRSA (238; 49.27%). Most of the participants were from 40-45 (69.56%) years of age. The common participants were females (60.86%), Saudi nationals (94.20%), university graduates (52.17%), belonged to the non-health sector (59.42%), and were

not suffering from any chronic disease (78.26%) (Table 1).

Characteristics		Numbers*	%
Residence	Northern Border Region of Saudi Arabia (NBRSA)	245	50.72
	Al-Jouf Region of Saudi Arabia (AJRSA)	238	49.27
Age (Years)	40-45	336	69.56
	46-50	105	21.73
	51-55	35	7.24
	56-60	7	1.44
Sex	Female	294	60.86
	Male	189	39.13
Nationality	Saudi	455	94.20
	Non-Saudi	28	5.79
Nature of Work	Non-health sector	287	59.42
	Non-working / Retired	105	21.73
	Health sector	91	18.84
Education level	University education	252	52.17
	Postgraduate education	133	27.53
	Secondary education	63	13.04
	Intermediate education	35	7.24
Do you suffer from any chronic diseases?	No chronic disease	378	78.26
	Hypertension	63	13.04
	Diabetes	21	4.34
	Hypercholesterolemia	14	2.89
	Rheumatoid arthritis	7	1.44

Table 1: The demographic characteristics (residence, age, sex, nationality, work profile, education, and chronic disease status) of the participants (N = 483).

We assessed the knowledge of the participants (N = 483) about HZ disease (Table 2). About 55.07% had heard about HZ disease, whereas 44.92% were not aware of HZ. The majority of the participants (39.13%) were not aware of HZ. The participants specifically considered age (15.94%), chronic diseases (7.24%), immunodeficiency (4.34%), unhealthy diet (2.89%), stress and fatigue (1.44%), and not getting enough sleep (1.44%) as a potential risk factor for HZ. An appreciable number of participants (27.53%) selected two or more than two risk factors for HZ. Around 81.15% (59.42% + 21.73%) of participants did not know the relation between HZ and chickenpox. Approximately 27.53% of contributors acknowledged that they can get HZ if they come in contact with an infected person, whereas 20.28% disagreed with it and 52.17% did not have any knowledge about it. Around 55.07% of contributors know that HZ is a treatable, whereas 44.91% (4.34 + 40.57) contributors were not aware of it. The majority of the population (33.33%) was not aware of the susceptible groups for HZ (elderly, male, female, children, people with immunodeficiency, etc.) and 23.18% identified that two or more of these groups may be susceptible to HZ. Other participants had different views about the susceptible population of HZ (elderly = 15.94%; male = 4.34%; female = 2.89%; children = 2.89%; people with immunodeficiency = 2.89%). It was important to note that 40.57% of people were not aware of the complications of HZ, whereas 37.68% of people recognized two or more complications selected from the group consisting of skin rash, neuropathy,

blisters, sore throat, and fever. However, it was interesting that the majority of the participants selected skin rash as one of the complications in this case. A very small percentage of the participants provided specific complications of HZ (skin rash = 11.59%; neuropathy = 4.34%; blisters = 2.89%; sore throat = 1.44%; fever = 1.44%).

A knowledge of vaccination among the general population is essential for public health [17]. Therefore, we assessed the knowledge of the studied population about the HZ vaccine. It has been observed that more than half of the participants (50.72%) did not hear about the HZ vaccine. Around 52.16% (4.34 + 47.82) of people were not aware that the HZ vaccine can lessen the frequency of the HZ by > 50%. Nearly 33.33% of the contributors agreed that the HZ vaccine can treat HZ, whereas the remaining 66.66% (7.24 + 59.42) people disagreed with it. Around 17.39% of the participants opined that there is no requirement to get the HZ vaccine if an individual has been infected with chickenpox during childhood, whereas 82.6% (24.63 + 57.97) people showed a difference in opinion. About 13.04% of participants stated that the HZ vaccine is not needed if a person has had HZ, whereas 86.94% (24.63 + 62.31) disagreed with it. The majority of the population (40.57%) was not aware of the age the HZ vaccine can be given; 15.94% agreed that it can be given to all ages; 23.18% opined for adults over 50 years of age; 11.59% voted for adults, 7.24% chose neonates and 1.44% selected children.

The attitude and practices followed by the general population concerning any disease play a vital role in the epidemiology of the diseases [7,9,11-16]. The attitude and practice of HZ vaccination among the studied population are mentioned in Table 3. It was observed that only 5.79% of participants had taken the HZ vaccine, while 94.20% never took the vaccine. One of the reasons for this observation may be that 94.20% of people did not suffer from HZ. Therefore, this observation may be considered acceptable to us. There may be many apprehensions if a person avoids taking a vaccine against a disease [7,9,11-16]. Our study revealed that 36.23% did not take HZ vaccine as they were not aware of it; 13.04% were concerned about the side effects; 11.59% believed they did not need HZ vaccine as they were healthy; 7.24% thought that it is a waste of money to get vaccinated against HZ and identical percentage did not take HZ vaccine as it was not covered by health insurance; 7.24% did not believe in HZ vaccine; 1.44% preferred to take HZ vaccine if they were sick; and 15.94% provided two or more than two reasons for not getting HZ vaccine. People get worried about getting a disease, including HZ. Nearly 37.67% (30.43 + 7.24) of the participants were worried

Knowledge		Numbers*	%
Have you heard about herpes zoster (HZ or shingles) disease?	Yes	266	55.07
	No	217	44.92
Which of the following are risk factors for HZ?	I don't know	189	39.13
	Age	77	15.94
	Chronic diseases	35	7.24
	Immunodeficiency	21	4.34
	Unhealthy diet	14	2.89
	Stress and fatigue	7	1.44
	Not getting enough sleep	7	1.44
	Two or more than two risk factors mentioned above	133	27.53
If someone has chickenpox previously, they will be at threat of HZ.	Yes	91	18.84
	No	105	21.73
	I don't know	287	59.42
You can get HZ if you come in contact with an infected person.	Yes	133	27.53
	No	98	20.28
	I don't know	252	52.17
HZ is a treatable disease.	Yes	266	55.07
	No	21	4.34
	I don't know	196	40.57
Which groups are susceptible to HZ?	I don't know	161	33.33
	Elderly	77	15.94
	Male	21	4.34
	Female	14	2.89
	Children	14	2.89
	People with immunodeficiency	14	2.89
	All of the above	70	14.49
	Two or more than two groups, but not all groups as mentioned above	112	23.18
What are the complications of HZ?	I don't know	196	40.57
	Skin rash	56	11.59
	Neuropathy	21	4.34
	Blisters	14	2.89
	Sore throat	7	1.44
	Fever	7	1.44
	Two or more complications as mentioned above	182	37.68
Have you heard about the HZ vaccine?	Yes	238	49.27
	No	245	50.72
The HZ vaccine can lessen the occurrence of HZ by > 50%.	Yes	231	47.82
	No	21	4.34
	I don't know	231	47.82
The HZ vaccine can treat HZ.	Yes	161	33.33
	No	35	7.24
	I don't know	287	59.42
There is no requirement to get the HZ vaccine if an individual was infected with chickenpox as a child.	Yes	84	17.39
	No	119	24.63
	I don't know	280	57.97
The HZ vaccine is not required if an individual has had HZ.	Yes	63	13.04
	No	119	24.63
	I don't know	301	62.31
The HZ vaccine should be given to:	Children	7	1.44
	Adults	56	11.59
	Adults over 50 years of age	112	23.18
	Neonates	35	7.24
	All ages	77	15.94
	I don't know	196	40.57

Table 2: The knowledge (perceptions about HZ, its risk factors, transmission, susceptibility, complications, treatment, awareness about the HZ vaccine, vaccine effectiveness, misconceptions about vaccine, and vaccine recommendations for vaccination) assessment of the participants (N = 483).

Attitudes / Practice		Numbers*	%
Have you ever taken a vaccine against HZ?	Yes	28	5.79
	No	455	94.20
If you haven't taken the HZ vaccine, what prevents you from getting the vaccine?	I didn't know about the vaccine	175	36.23
	I am concerned about the side effects of the vaccine	63	13.04
	I am healthy	56	11.59
	Waste of money	35	7.24
	Not protected by health insurance	35	7.24
	I don't believe in vaccines	35	7.24
	I choose to get the vaccine when I am ill	7	1.44
	Two or more reasons as mentioned above	77	15.94
	I agree	147	30.43
	I strongly agree	35	7.24
I'm worried about getting HZ	I do not agree	84	17.39
	Strongly disagree	56	11.59
	Neutral	161	33.33
	I agree	189	39.13
HZ disease greatly affects health.	I strongly agree	42	8.69
	I do not agree	56	11.59
	Strongly disagree	21	4.34
	Neutral	175	36.23
I am interested in learning more about HZ	I agree	252	52.17
	I strongly agree	77	15.94
	I do not agree	35	7.24
	Strongly disagree	21	4.34
	Neutral	98	20.28
I will take the HZ vaccine if the doctor recommends it	I agree	266	55.07
	I strongly agree	77	15.94
	I do not agree	42	8.69
	Strongly disagree	21	4.34
	Neutral	77	15.94
When you contact a person with HZ, how do you protect yourself?	Do nothing	70	14.49
	Get vaccinated	56	11.59
	Don't use the same tools.	49	10.14
	Wearing a mask	35	7.24
	Taking medication	21	4.34
	No hugging or shaking hands	21	4.34
	Do not share food.	14	2.89
	Two or more protective measures as mentioned above	217	44.92
	I agree	224	46.37
What is your primary source of information about HZ and its vaccine?	Personal experience with the disease	14	2.89
	Specialization in microbiology, including viruses	7	1.44
	The doctor	91	18.84
	Someone else	63	13.04
	I have no information about him	7	1.44
	From an infected person	70	14.49
	Ministry of Health	7	1.44
	Bulletins		

Table 3: The attitudes and practices (mindset towards HZ, vaccination status, barriers to taking the HZ vaccine, perceptions of HZ's impact on health, protective measures, interest in learning about HZ, and informational needs about HZ) of the participants (N = 483).

about getting HZ; 28.98% (17.39 + 11.59) were not worried about HZ; and 33.33% were neutral about this fact. Every disease affects an individual's health. Some of them greatly affect health. A major portion of the participants (47.82%; 39.13 + 8.69) agreed that HZ greatly affects health; 15.93% (11.59 + 4.34) disagreed; and 36.23% were neutral about this aspect of HZ. Learning about a disease is good for self-care. About

68.11% (52.17% + 15.94%) of participants showed interest in learning more about HZ, 11.58% (7.24% + 4.34%) did not show interest, and 20.28% were neutral. People need motivation from a healthcare professional (doctor) for vaccination. A major portion of the participants (71.01%; 55.07 + 15.94) showed interest in taking the HZ vaccine on the doctor's recommendation; 13.03% (8.69 + 4.34) would not take the HZ vaccine even after the doctor's recommendation; and 15.94% were neutral about this attribute. Understanding protective measures against infectious diseases is important. We asked people about this fact regarding HZ. About 44.92% of people opined to take multiple protection steps consisting of doing nothing, getting vaccinated, avoiding the use of the same tools, wearing a mask, taking medication, having no contact with infected persons, and not sharing food. The majority of the specific protection measures were doing nothing (14.49%), getting the vaccine (11.59), and avoiding the use of the same tools (10.14%). The practice and attitude of the public regarding a disease are affected by the source of information. Most of the participants 46.37% learned about HZ from the internet, which was followed by doctors (18.84%), infected persons (14.49), and other people (13.04). It was interesting to note that only 1.44% of people mentioned the Ministry of Health Bulletins as their source of information.

Discussion

This study examined the KAP about HZ and its vaccines among the 483 people (≥ 40 years) residing in NBRSA and AJRSA. The results demonstrate information gaps and low vaccine uptake in people of NBRSA and AJRSA, comparable with worldwide observations but highlighting regional issues.

A large percentage of the participants showed poor to moderate KAPs about HZ and its vaccine (Table 2 and Table 3). The data also indicated misconceptions concerning the mode of transmission, the link between chickenpox and HZ, limited awareness about the HZ vaccine, and the source of information. These findings aligned with previous studies reported in different parts of Saudi Arabia about KAPs of HZ [6-9]. One study reported an appreciable awareness of the HZ vaccine among the participants [14]. Two more studies also described considerable awareness of HZ, but among diabetes patients residing in the AL-Qasim and Al-Ahsa regions of Saudi Arabia [9,15]. A few international studies (UAE, Korea, Hong Kong, China, USA) also expressed significant awareness of their population regarding HZ and HZ vaccine [11,18-21]. The good awareness about HZ in these studies may be due to better healthcare facilities and health information systems in the studied regions. However, these studies

were silent about the population residing in NBRSA and AJRSA. This contrast in the results between our findings and previous studies implies that national awareness differs from region to region. This fact mandates KAP assessment of HZ at the national level and identifies the regions of poor KAP in Saudi Arabia.

Our study identified that the majority of people of NBRSA and AJRSA can take the HZ vaccine on doctor's recommendations and are ready to learn more about HZ. Most of the people got HZ-related information through the internet. However, the internet may not provide authentic information about HZ. It has been observed that only 1.44% of people got HZ and HZ vaccine information through the authentic Ministry of Health Bulletins. This is one of the important areas of concern. This fact implies that the Ministry of Health of the NBRSA and AJRSA must start their community-based educational programs about HZ in their regions.

There is a considerable information gap as well as a low HZ vaccination rate among the people of NBRSA and AJRSA. The study highlights the necessity of educational campaigns and awareness programs in NBRSA and AJRSA to have a better understanding of the HZ vaccination and get greater acceptance of it. To improve the overall public health outcomes in NBRSA and AJRSA, these findings can give healthcare practitioners and policymakers valuable information that can be used to build initiatives to increase vaccine coverage.

The study targeted people 40 years or older than 40 years allowing a better understanding of the awareness, attitude, and practice of HZ vaccination among the high-risk individuals. This also makes findings helpful in designing public health initiatives in comparable demographics. The designed online survey, derived from a prior investigation and delivered through Google Forms, provides thorough data collection. This method enabled a broad community reach and a deep and nuanced examination of HZ and its vaccine knowledge, attitudes, and practices.

The study also encompasses a few limitations. Firstly, the sample size of the survey is small and its outcomes cannot be generalized to the entire country. This warrants additional studies in various regions of the country. Second, the Google Form-based survey risks recollection and social desirability biases, where individuals may misreport their experiences or beliefs. Thirdly, the cross-sectional studies cannot analyze causal linkages or time-based changes in attitudes and familiarity. Fourthly, the hypothesis of a homogenous focus group may often ignore socioeconomic and cultural disparities in knowledge and attitudes.

Future studies must focus on initiating public educational programs to raise HZ vaccination awareness. It is imperative to conduct such educational

programs in all small towns, villages, and small cities in Saudi Arabia. Cultural and demographic factors affect vaccine adoption. Therefore, an understanding of cultural and demographic hurdles and facilitators would help develop relevant public health. Nuanced understanding requires comparative studies across regions of the country, longitudinal research to assess changes, and risk perception in vaccine decision-making. To inform evidence-based vaccine awareness methods, worldwide perspectives on HZ awareness and vaccination and social media's role in information dissemination should be examined.

Conflict of Interest

The author declares that there is no conflict of interest regarding the publication of this paper.

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