

Level of Knowledge of Herpes Zoster among Visitors to Health Centers in Makkah Al-Mukarramah 2023

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Abstract

Background: Herpes zoster (HZ), generally known as shingles, is an extremely contagious dermatomal rash characterized by painful blistering that results from reactivation of the varicella-zoster virus (VZV). Herpes zoster (HZ) causes significant morbidity, particularly in older adults. With the advent of a recombinant zoster vaccine, HZ is potentially preventable. However, data on HZ burden and healthcare utilization in primary care populations remains scarce. Herpes zoster (HZ) is a painful vesicular rash that happens when an infection with the varicella-zoster virus in the sensory ganglia is reactivated. The incidence and severity of HZ and its complications increase with advancing age, with a marked increase after 50 years of age. In addition, diabetes mellitus has been found to be a risk factor for severe, persistent post herpetic neuralgia. Herpes zoster (HZ) infection can significantly impair the quality of life of the affected individuals, and its treatment imposes a considerable cost burden on the health-care system and on society at large. However, there is little information on the perception of this disease and the acceptability of vaccines in Saudi Arabia, data on Herpes Zoster (HZ) incidence and complications in Saudi Arabia (KSA) are unknown.

Aim of the study: To assessment the level of knowledge of herpes zoster among visitors to health centers in Makkah Al-Mukarramah 2023.

Methods: A cross-sectional study was conducted at patients with history among the herpes zoster visiting the primary health sector in Makkah City, from June to July 2023, 100 patients were included and data were collected by using a written questionnaire also online questionnaire and telephone interviews, was developed based on a literature review, to assessed the Level of knowledge of herpes zoster.

Results: most of the participants (30.0%) were in the age group(60-69) the majority of them male were (62.0%), marital status most of participants married were(78.0%), patient enrollment sites in health centers the majority of participant are family medicine clinic were(72.0%).

Conclusion: There is a clear gap in the literature regarding the incidence of Herpes zoster infection, and the Level of knowledge by Herpes zoster in the KSA countries. Further research into the epidemiology of Herpes zoster is necessary to inform the implementation of vaccination programs in the GCC countries. Herpes zoster is a prevalent condition affecting a wide range of patients including geriatrics.

Keywords: Level, knowledge, herpes zoster, visitors, health centers , Makkah

Introduction

Herpes Zoster (HZ), also known as shingles, is a skin condition caused by the reactivation of a latent varicella zoster virus, which is the virus that also causes chickenpox.(1) herpes zoster, is most commonly seen in patients who are older than age 50, immune compromised, or receiving immunosuppressive therapy. (2) Every year, there are approximately 1 million new cases of herpes zoster in the United States.(3) In addition, the incidence of HZ varies among races. There is a significantly higher rate of herpes zoster among whites compared with African Americans and Hispanics.(4) This clinical form of the disease is characterized by a painful, unilateral vesicular eruption, which usually occurs in a restricted dermatome distribution such as the trunk and extremities(5). Herpes Zoster can be diagnosed clinically, with a rare need for laboratory investigation(6).The incidence of Herpes Zoster has been increasing throughout the world. In the United States, Herpes Zoster affects more than 1.2 million individuals annually. (7)The incidence and severity of Herpes Zoster and its complications increase with advancing age, with a marked increase after 50 years of age, and this is temporally associated with an age-related decline in cell-mediated immunity to varicella-zoster virus (8).

The incidence, severity, and complications of Herpes Zoster increase with age, and >50% of all patients in whom Herpes Zoster develops are older than 50 to 60 years. Complications associated with Herpes Zoster occur in almost half of all elderly patients (9). The most common of these complications is post herpetic neuralgia (PHN), which is defined as pain in Herpes Zoster lesions that lasts longer than 3 months (10). There is no universally accepted treatment for PHN, and the available treatments are accompanied by considerable adverse effects. Elderly patients with PHN often need to make multiple visits to medical offices for prescription analgesics in attempts to resolve the pain (11). An effective vaccine against HZ has been developed and can reduce the incidence and severity of both HZ and PHN by 51% and 67%, respectively. Furthermore, the vaccine reduces the burden of illness due to Herpes Zoster by 61% (defined in a double-blind, placebo-controlled trial, the shingles prevention study, by using a composite measure of incidence, severity, and duration of pain) (12). In addition, vaccine protection may persist for at least 7~10 years, as observed in the long-term persistence sub study (13).

By evaluating the burden of Herpes Zoster and its utilization of healthcare resources, primary care providers can make informed decisions on the necessity of targeted Herpes Zoster vaccination and identify any gaps in current management practices. (14)

The Gulf Cooperation Council (GCC) is a political and economic alliance of six Middle Eastern countries: Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates (UAE), which was established in 1981.(15) The total population of the GCC countries, as of 2022, is 58,862,475(16). Numerous GCC countries have introduced VZV vaccination into their national immunization programs over the last decade, such that over 50% of the Middle Eastern population now reside in countries offering universal Varicella Zoster Virus vaccination (17). However, vaccination against Herpes Zoster is not currently included in the vaccination programs of any of the GCC countries, though it has recently been recommended in Saudi Arabia prior to official authorization (18).

Literature Review

study showed by Al Kaabi et al whites were more than twice as likely as AAs to report having had Herpes Zoster and more than 4 times more likely of having seen someone else with HZ.(19) Schmidt et al (2017) reported an even larger difference in HZ prevalence between the 2 races (16.1% white, 4.5% AA). The reasons for these reported differences in the disease prevalence by race remain unclear but likely are multifactorial, including potential biologic differences, the recognition and reporting of the disease, and the frequency and intensity of medical interactions.(20). People with diabetes have a 20% higher risk of developing Herpes Zoster, which can lead to deterioration of glycemic control and increased consumption of healthcare resources. Although the literature has demonstrated the efficacy of Herpes Zoster vaccination in reducing incidence rates (21),

According to the World Health Organization (WHO), Saudi Arabia a twenty-year audit study of herpes zoster (HZ) in the Asia-Pacific region identified immune senescence and immunosuppression as the principal risk factors for HZ (22).

Study by Alhaid et al (2023) reported that only 6.7% of diabetic patients were diagnosed with herpes zoster. Additionally, 23.7% of them knew someone who had been diagnosed with herpes zoster, whether diabetic or non-diabetic. (23) This rate is lower than the rates in previous studies in Korea, where 14.7% of respondents had a history of herpes zoster (24) and 26.1% among COPD patients in the USA(25).

The lack of studies identified in this review relating to Herpes Zoster incidence and prevalence reflects the lack of evidence found in the Middle East by a recent meta-regression study examining trends in global Herpes Zoster infection [26]. This may be because Herpes Zoster is regarded as a low health priority in these countries. Global incidence rates of Herpes Zoster have been reported to range from 3 to 5 cases per 1000 person-years, and 5.23–10.9 cases per 1000 person-years in individuals ≥ 50 years of age (12).

Study reported by Alhothali et al (2023) the vaccination rate in was 18.8%. Notably, this rate is significantly higher than the vaccination rates reported in previous studies among general populations in the Western Region of Saudi Arabia (3.4%) (27), in Qassim region KSA (8.5%) (28), Korea (9%) (28) and the United Arab Emirates (3.3%).One quarter of Saudi diabetic patients were willing to accept the herpes zoster (HZ) vaccine (29).

Furthermore, studies show that healthcare providers play a crucial role in promoting and recommending vaccination to improve vaccination rates (30).

Furthermore, a trend of increasing Herpes Zoster incidence has been observed over the last few decades, irrespective of region (27); incidence data in the C 65 years age cohort from the USA, Japan, and Australia demonstrated an average annual increase in Herpes Zoster of between 2.35% and 3.74% (28). The global increase in Herpes Zoster incidence is expected to be exacerbated by the world's ageing population and greater life expectancy, as older individuals increasingly constitute a larger proportion of the total population of nearly every country. An estimated increase of between 83% and 376% by 2030 is expected in the number of annual incident cases of Herpes Zoster .

Rationale:

In 2008, the Advisory Committee on Immunization Practices recommended that all people older than age 60 receive the zoster vaccination. The vaccine is recommended without serologic testing and regardless of race or medical history of varicella virus infection or Herpes Zoster. When vaccinated, the risk of having Herpes Zoster, the burden of disease, and the incidence of post herpetic neuralgia decrease by 51%, 61%, and 66%, respectively, over 3 years. In 2011, the US Food and Drug Administration approved Herpes Zoster vaccination for immune competent people older than age 50. However, despite the recommendation of the Advisory Committee on Immunization practices the rate of zoster vaccination is low, even though less than half of the patients were not have knowledge and not aware of herpes zoster (HZ) , also the vaccination rate for herpes zoster was low. This study highlights the need for healthcare providers to play an active role in promoting and recommending herpes zoster vaccination, as well as providing health education in simple language through various media to increase community awareness about herpes zoster and its vaccine. By increasing awareness and vaccination rates, the burden of herpes zoster on this vulnerable population can be reduced .

Aim of the study:

To assessment the level of knowledge of herpes zoster among visitors to health centers in Makkah Al-Mukarramah 2023.

Objectives:

To assessment the level of knowledge of herpes zoster among visitors to health centers in Makkah Al-Mukarramah 2023.

Methodology:

Study design:

This study is descriptive type of cross-sectional study was conducted among 400 candidates this study included visitors to health centers, in primary health sector in Makkah Al Mukarramah.

Study Area

The study has been carried out in the city of Makkah Al-Mokarramah. Makkah is the holiest spot on Earth. It is the birthplace of the Prophet Mohammad and the principal place of the pilgrims to perform Umrah and Hajj. It is located in the western area in Kingdom of Saudi Arabia and called the Holy Capital. Contains a population around 3 million. This study has been conducted in Makkah in the primary health sector in Makkah, Saudi Arabia. During the June to July 2023, and it reflects a diversified demographic profile with a considerable portion of the population comes from rural descent, while others come from an urban one. This difference translates into biological, socioeconomic and lifestyle differences in the Makkah population.

Study Population

The study has been conducted regarding visitors to health centers, in June to July 2023 in primary health sector in Makkah Al Mukarramah.

Selection criteria:

Inclusion criteria

- Visitors to health centers in primary health sector complain about herpes zoster in Makkah Al Mukarramah.
- All nationalities

Exclusion criteria :

- No specific exclusion criteria.

Sample size

Visitors to health centers in primary health sector complain about herpes zoster in Makkah around, the sample size has been calculated by applying Raosoft sample size calculator based on (The margin of error: 5%, Confidence level: 95%, and the response distribution was considered to be 20%) accordingly the Sample size is (400) in primary health sector after official communication with the primary health sector in the Makkah and adding 10 more to decrease margin of error. After adding 5% oversampling, the minimum calculated sample has been 400. Computer generated simple random sampling technique was used to select the study participants.

Sampling technique:

Systematic random sampling technique is adopted. After that, by using random number generator, then simple random sampling technique has been applied to select from primary health sector. Also, convenience sampling technique will be utilized to select the participants in the study. By using systematic sampling random as dividing the total students by the required sample size; (400).

Data collection tool

The self-administered questionnaire is designed based on previous studies to assessment the level of knowledge of herpes zoster among visitors to health centers in Makkah. The questionnaire has been developed in English. The questions were first pre-tested and were revised and finalized after it has been pilot tested. Before completing the survey, participants were required to indicate their consent using a forced response question followed by the survey questionnaires. The survey is estimated to take 10 min to complete .

To collect the information, a set of questions were constructed and developed. All questions were closed-ended, with tick boxes provided for responses; participants answered the questionnaires from the June to July 2023 the period of study in 2023.

The questionnaire consisted of questions that

First part General and Socio demographic information. These variables included contact data (email or mobile phone number),(age, gender, Sources of information). Other variables were education level, economic level.

A questionnaire has been developed that had Socio demographic data and questions related to knowledge. The two senior faculty members checked the questionnaire's validity and comprehension, and it was revised according to their suggestions. A pilot study has been conducted on secondary students to check the questionnaire's understanding and responses further, and its Cronbach's alpha was 0.75. The results of the pilot study were not included in the final analysis.

The assessment the to assessment the level of knowledge of herpes zoster among visitors to health centers as per each topic/question, and also as per each response/answer . Data entry and analysis were carried out using the Statistical Package for the Social Sciences.

Data collection technique:

Researcher has been visits the selected primary health sector after getting the approval from the ministries of health. The researcher has been obtained permission from participants.

After the arrival of the participants has been explained the purpose of the study to all participants attending .

Data entry and analysis:

The Statistical Package for Social Sciences (SPSS) software version 24.0 has been used for data entry and analysis. Descriptive statistics (e.g., number, percentage) and analytic

Pilot study

A pilot study has been conducted in the same sector due to the similarity to the target group using the same questionnaire to test the methodology of the study. As a feedback, the questionnaire has been clear and no defect has been detected in the methodology

Ethical Approval

This study was approved from regional research center in Makkah. Each participant gave a verbal consent prior to recruitment and confidentiality was assured for each situation.

Budget: Self-funded**Results****Table 1: Distribution of socio-demographic characteristics of participant . (n-400)**

	N	%
Age		
<50 y	92	23
50-59 y	116	29
60-69 y	120	30
≥70 y	72	18
Gender		
Male	248	62
Female	152	38
Marital status		
Single	88	22
Married	312	78
Patient enrollment sites in health centers		
Internal medicine clinic	60	15
Family medicine clinic	288	72
Geriatric clinic	52	13
Income status		
Less than 10000RS	148	37
10000-20000 RS	196	49
More than 20000 RS	56	14
Occupation		
Employed	84	21
Unemployed	316	79

Table 1 shows that most of the participants (30.0%) were in the age group(60-69) years follow by the age 50-59 were (29.0%) followed by < 50 years were (23.0%), the majority of them male was higher compared to female(62.0% and 38.0%) , regarding the marital status most of participants married were(78.0%) while single were(22.0%), regarding patient enrollment sites in health centers the majority of participant are family medicine clinic were(72.0%) while Internal medicine clinic were(15.0%), regarding Income status the majority of participant are between 10000 to 20000 were(49.0%) while less than 10000 were(37.0%) but more than 20000 were (14.0%), regarding occupation the majority of participant are unemployed were(79.0%) while employed practitioner were(21.0%).

Table 2: Distribution of general knowledge of participant about herpes zoster patients

	N	%
History of chickenpox		
Yes	260	65
No	44	11
Don't know	96	24
Chickenpox vaccination status		
Yes	72	18
No	104	26
Don't know	224	56
Shingles symptoms duration		
Less than 30 days	84	21
1-3 months	236	59
More than 3 months	80	20
Medication therapy used		
Herbal remedies	76	19
Analgesics + Antivirals	84	21
Analgesics + Antivirals + Herbal remedies	88	22
Antivirals	152	38
History of concomitant pregnancy or lactation (female)		
No pregnancy or lactation	60	15
Pregnancy only	88	22
Lactation only	252	63
Source of information about the shingles of fire		
The internet	108	27
The radio	220	55
Doctor	44	11
Friend	28	7

Table 2 shows regarding the history of chickenpox that most of the participants answer Yes (65.0%) were follow by the Don't know were (24.0%) followed No were (11.0%), regarding the chickenpox vaccination status most of participants answer Don't know were(56.0%) while No were(26.0%) but Yes were (18.0%), regarding Shingles symptoms duration the majority of participant are 1-3 months were (59.0%) while Less than 30 days were (21.0%) but more than 3 months were (21.0%), regarding medication therapy used the majority of participant antivirals were(38.0%) while analgesics + antivirals + herbal

remedies were (22.0%) but analgesics + antivirals were (21.0%) while herbal remedies were (19.0%) regarding history of concomitant pregnancy or lactation (female) the majority of participant from the radio were (55.0%) while the internet were (27.0%)

Table 3: Distribution of knowledge of participant about herpes zoster patients

Knowledge of herpes zoster	N	%
Etiology of the herpes zoster		
Viral	128	32
Bacteria	220	55
I don't know	52	13
Immunity against herpes zoster decreases with advancing age		
Yes	232	58
No	136	34
I don't know	32	8
infected with chickenpox makes a person more susceptible to getting shingles (herpes zoster) later in life		
Yes	264	66
No	100	25
I don't know	36	9
Individuals with a weakened immune system are at a higher risk of developing shingles (herpes zoster).		
Yes	232	58
No	132	33
I don't know	36	9
In your opinion, who is more susceptible to getting shingles		
Less than 40 years	68	17
41-49 years	80	20
50 years and more	252	63
What do you know about signs and symptoms of shingles		
Chronic back pain	48	12
Painless skin rash	88	22
Heart disease	112	28
Painful skin rash	152	38
Is there a vaccine for herpes zoster?		
Yes	236	59
No	128	32
I don't know	36	9
Can herpes zoster transmit through direct contact		
Yes	256	64
No	124	31
I don't know	20	5

Can a person get herpes zoster more than once?		
Yes	216	54
No	84	21
I don't know	100	25
Is taking antiviral medications such as acyclovir an effective treatment for herpes zoster		
Yes	252	63
No	108	27
I don't know	40	10
What are the complications of herpes zoster		
Hearing loss	220	55
UTI	8	2
Meningitis	228	57
Chronic pain	132	33
Visual impairment	180	45

Table 3 distribution of knowledge of participant about herpes zoster patients shows regarding the etiology of the herpes zoster most of the participants answer bacteria (55.0%) were follow by viral were (32.0%) while Don't know were (13.0%), regarding the immunity against herpes zoster decreases with advancing age most of participants answer Yes were (58.0%) followed by No were (34.0%) while Don't know were(8.0%), regarding the infected with chickenpox makes a person more susceptible to getting shingles (herpes zoster) later in life the most of participant answer Yes were (66.0%) while No were(25.0%) but I don't know were (9.0%), regarding individuals with a weakened immune system are at a higher risk of developing shingles (herpes zoster) the majority of participant answer Yes were (58.0%) while No were (33.0%) but Don't know were (9.0%), regarding in your opinion, who is more susceptible to getting shingles the majority of participant 50 years and more were(63.0%) while 41-49 years were (20.0%) but Less than 40 years were (17.0%), regarding what do you know about signs and symptoms of shingles the majority of participant Painful skin rash were(38.0%) while heart disease were(28.0%) but Painless skin rash were (22.0%) while chronic back pain were (12.0%), regarding there a vaccine for herpes zoster the majority of participant answer Yes were(59.0%) while No were(32.0%), but I don't know were (9.0%), regarding can herpes zoster transmit through direct contact the majority of participant answer Yes were(64.0%) while No were(31.0%) but I don't know were (5.0%), regarding the can a person get herpes zoster more than once the majority of participant answer Yes were (54.0%) followed by I don't know were (25.0%) while No were (21.0%), regarding is taking antiviral medications such as acyclovir an effective treatment for herpes zoster majority of participant answer Yes were (63.0%) while No were (27.0%) but the I don't know were (10.0%) regarding the what are the complications of herpes zoster majority of participant answer meningitis were (57.0%) followed by hearing loss were (55.0%) while Visual impairment were (45.0%) but Chronic pain were (33.0%) .

Table 4: Distribution of of knowledge of participant about herpes zoster patients score .

	Knowledge		Score	
	N	%	Range	Mean±SD
Weak	192	48	3-10.	7.113±1.725
Average	140	35		
High	68	17		
Total	400	100		
X ²	58.16			
P-value	<0.001*			

This table 4 distribution of knowledge of participant about herpes zoster patients score shows the majority of participant (48.0%) have weak of the knowledge about herpes zoster followed by (35.0%) of participant average while high were (17.0%) while Range(3-10) and Mean ±SD(7.113±1.725), X² 58.16 and a significant relation P=0.001

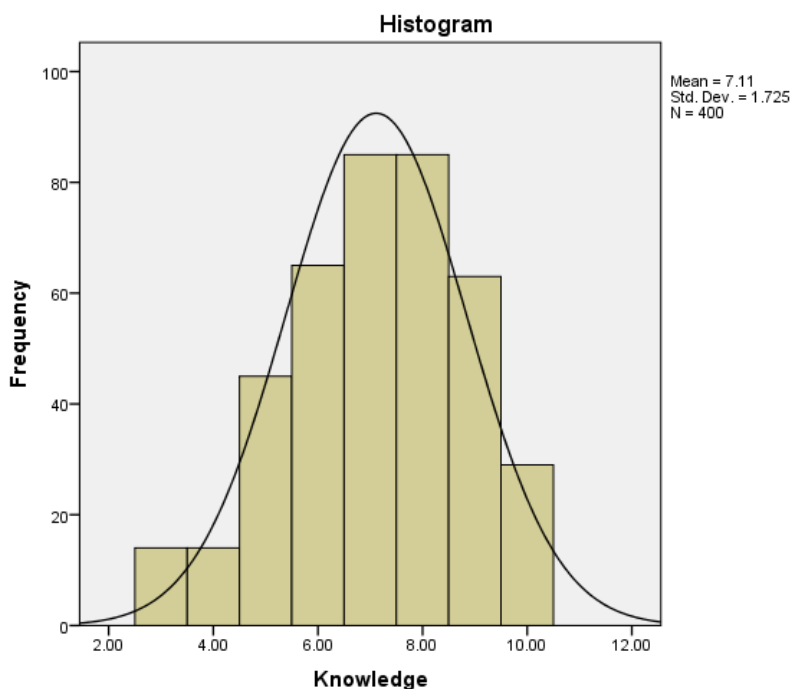
Figure (1): Distribution of knowledge of participant about herpes zoster patients score .

Figure (2): Distribution of knowledge of participant about herpes zoster patients

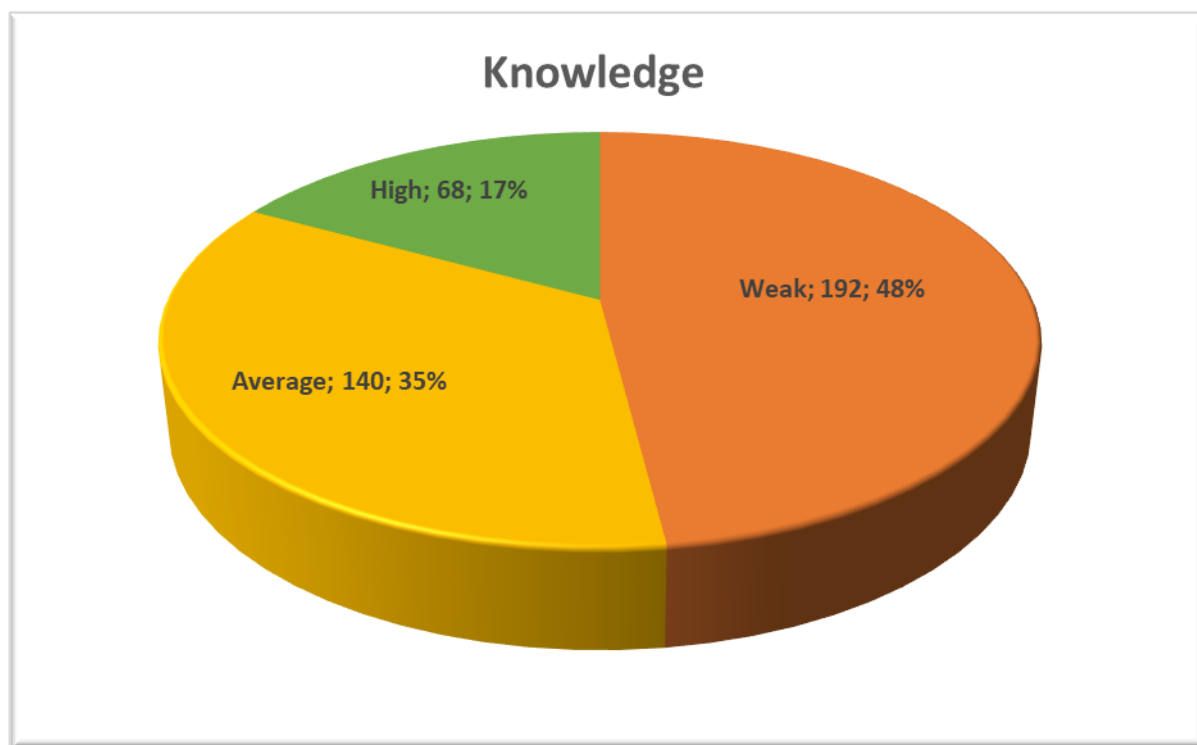


Table 5 Distribution of the relationship of the Socio-demographic characteristics and knowledge of participant about herpes zoster patients

Demographic data		N	Knowledge			F or T	ANOVA or T-test	
			Mean	±	SD		Test value	P-value
Age	<50 y	92	8.587	±	0.787	F	117.631	<0.001*
	50-59 y	116	7.888	±	1.155			
	60-69 y	120	5.658	±	1.693			
	≥70 y	72	6.403	±	1.044			
Gender	Male	248	7.141	±	1.788	T	0.423	0.672
	Female	152	7.066	±	1.622			
Marital status	Single	87	7.816	±	0.922	T	4.397	<0.001*
	Married	313	6.917	±	1.843			
Patient enrollment sites in health centers	Internal medicine clinic	60	5.133	±	1.780	F	82.131	<0.001*
	Family medicine clinic	288	7.267	±	1.331			
	Geriatric clinic	52	8.538	±	1.686			

Income status	Less than 10000RS	148	7.635	±	1.544	F	76.805	<0.001*
	10000-20000 RS	196	6.255	±	1.561			
	More than 20000 RS	56	8.732	±	0.751			
Occupation	Employed	84	8.821	±	0.894	T	11.868	<0.001*
	Unemployed	316	6.658	±	1.605			

Table (5) Distribution of the relationship of the Socio-demographic characteristics and knowledge of participant about herpes zoster patients show regarding age increase in age <50 years (Mean± SD 8.587 ±0.787) followed by 50-59 (Mean± SD 7.888±1.155) heave a significant relation were P-value=0.001, F test were (117.631) , regarding the gender status is no significant relation the heave were P-value=0.672, T test were (0.423) increase in male were respectively (Mean± SD 7.141±1.788) followed by female were (7.066±1.622), regarding the Marital status is a significant relation the heave were P-value=0.077, T test were (4.397) increase in single followed by married were respectively (Mean± SD 7.816±0.922 and 6.917 ± 1.843), regarding the patient enrollment sites in health centers a significant relation heave were P-value=0.000, F test were (82.131) increase in geriatric clinic and family medicine clinic were respectively (Mean± SD 8.538±1.686 and 7.267±1.331), regarding the Income status a significant relation heave were P-value=0.001, F test were (76.805) increase in More than 20000 RS followed by less than 10000 RS were respectively (Mean± SD 8.732±0.751and 7.635±1.544)

Discussion

This study investigated the level of knowledge of herpes zoster among visitors to health centers during a sampling of patients at different primary care clinics and found that the level of knowledge rate overall was weak. Furthermore, we found a racial disparity in the percentage of patients knowledge that persisted in analyses, we postulate that the lower herpes zoster knowledge rate among visitors to health centers is partially the result of the lower self-reported prevalence of herpes zoster and the lower rate of witnessing friends/family with herpes zoster—all of which may influence perceived risk and therefore interest in herpes zoster. Similar study showed whites were more than twice as likely as report having had herpes zoster and more than 4 times more likely of having seen someone else with herpes zoster. (31)

In our study shows that most of the participants (30.0%) were in the age group(60-69) years follow by the age 50-59 were (29.0%) followed by < 50 years were (23.0%), the majority of them male was higher compared to female(62.0% and 38.0%) , regarding the marital status most of participants married were(78.0%) while single were(22.0%), regarding patient enrollment sites in health centers the majority of participant are family medicine clinic were(72.0%) while Internal medicine clinic were(15.0%), regarding Income status the majority of participant are between 10000 to 20000 were(49.0%) while less than 10000 were(37.0%) but more than 20000 were (14.0%), regarding occupation the majority of

participant are unemployed were(79.0%) while employed practitioner were(21.0%). (See table 1)

We showed that herpes zoster infections predominantly occurred among males more than female . Our result is consistent with a previous systematic literature review of herpes zoster incidence worldwide conducted by van Oorschot et al. in 2021. It estimated that male preponderance is more common than female (12). The finding is in similar to from nearby countries that showed a male to female ratio of 4:1, 2.5:1, and 3:2 in Qatar, Nepal, and Iran, respectively (28).The reason behind gender differences in the incidence of herpes zoster infection remains unknown; a review in this regard attributed this to gender bias at the time of diagnosis as females usually seek medical attention more frequently than males (19). It is also hypothesized that physiological stressors and hormonal changes among females may also have an effect on herpes zoster prevalence (22). in our study shows history of chickenpox that most of the participants answer Yes (65.0%), regarding the chickenpox vaccination status most of participants answer Don't know were (56.0%), regarding Shingles symptoms duration the majority of participant are 1-3 months were (59.0%) , regarding medication therapy used the majority of participant antivirals were(38.0%) while analgesics + antivirals + herbal remedies, regarding history of concomitant pregnancy or lactation (female) the majority of participant from the radio were(55.0%) (See table 3)

In the present study, only small number of participants were knowledge of herpes zoster of the signs and symptoms . This is lower than the rates of awareness in previous studies in Hong Kong (85.7%) (23) and the United Arab Emirates (58.7%) (30).

Regarding risk factors of herpes zoster, our study found that only Small number of participants were aware of the decreased immunity against herpes zoster with advancing age, knew about the increased susceptibility for those previously infected with chickenpox, and knew about the higher risk for individuals with weakened immune systems. These findings are consistent with previous studies. In Saudi Arabia, the most identifiable risk factors for herpes zoster were found to be immunodeficiency (63.2%), age (36.3%), and chronic diseases (36.3%) (28). The Hong Kong study reported that the majority of responders (84.7%) identified immune compromised state as a risk factor for herpes zoster , while in the United Arab Emirates, participants identified immunodeficiency (35.5%), chronic illnesses (18%), advanced age (32.7%), and stress (41.9%) as predisposing and risk factors for herpes zoster (30).Overall, the results highlight the need for increased public education and awareness of the risk factors for herpes zoster. Effective public health policies and interventions should be developed to improve the uptake of herpes zoster vaccine and reduce herpes zoster burden in different populations and regions. in our study show distribution of knowledge of participant about herpes zoster patients score shows the majority of participant (48.0%) have weak of the knowledge about herpes zoster followed by (35.0%) of participant average while high were (17.0%) while Range(3-10) and Mean \pm SD(7.113 \pm 1.725), χ^2 58.16 and a significant relation $P=0.001$.(See table 2,4)

Regarding the distribution of the relationship of the Socio-demographic characteristics and knowledge of participant about herpes zoster patient .(See table 5). It is possible that the knowledge of herpes zoster rate in our study population is higher than in the general community because the subjects already were being exposed to health care professionals by coming to a primary care clinic. In the general community, there may be some people who do

not have a primary care provider or access to health care and therefore are less likely to have received the knowledge of herpes zoster. Clinicians' clinical practice patterns or knowledge of the current knowledge of herpes zoster recommendations were not assessed in this study. This limits our ability to suggest that low knowledge of herpes zoster rates may have resulted from providers not having care delivery systems or provider education that facilitate knowledge in response to published guidelines. Future studies would need to incorporate ways to both inform and encourage practitioners to prescribe the for their appropriate patients .

Conclusion

Knowledge of herpes zoster is a quite common contagious condition affecting a wide range of residents of Saudi Arabia, especially the geriatric group. Health institutions in Saudi Arabia need to address the concerns regarding the burden of this condition, its catastrophic complications, and its preventive tools. Available knowledge of provide a great effectiveness in reducing both the incidence of herpes zoster and its complications. Widening the vaccine access and incorporating the vaccines in the immunization protocols in Saudi Arabia is important to improve population immunity against of herpes zoster infection. Herpes zoster is a common condition, and nearly 20% to 25% of Herpes zoster patients experience 1 or more complications, including other non-pain complications. Any type of complication more than triples the cost of Herpes zoster-related care. The medical care cost of treating incident Herpes zoster cases in the Saudi Arabia .

References

- [1] Patil, A., Goldust, M., & Wollina, U. (2022). Herpes zoster: a review of clinical manifestations and management. *Viruses*, 14(2), 192.
- [2] Wilms, L., Weßollek, K., Peeters, T. B., & Yazdi, A. S. (2022). Infections with Herpes simplex and Varicella zoster virus. *JDDG: Journal der Deutschen Dermatologischen Gesellschaft*, 20(10), 1327-1351.
- [3] Singh, G. K., Mitra, D., Kumar, S., Raman, N., Das, P., & Sharma, P. (2022). A Clinico-Epidemiological Study of Cases of Herpes Zoster in a Tertiary Care Hospital. *Journal of Skin and Stem Cell*, 9(1)..
- [4] Jeng, B. H. (2018). Herpes zoster eye disease: new ways to combat an old foe?. *Ophthalmology*, 125(11), 1671-1674.
- [5] Singh, P., Silverberg, N. B., & Silverberg, J. I. (2021). Outpatient healthcare utilization and prescribing patterns for herpes zoster in United States adults. *Archives of Dermatological Research*, 313, 155-162.
- [6] Patterson, B. J., Chen, C. C., McGuiness, C. B., Ma, S., Glasser, L. I., Sun, K., & Buck, P. O. (2022). Factors influencing series completion rates of recombinant herpes zoster vaccine in the United States: A retrospective pharmacy and medical claims analysis. *Journal of the American Pharmacists Association*, 62(2), 526-536.
- [7] Boutry, C., Hastie, A., Diez-Domingo, J., Tinoco, J. C., Yu, C. J., Andrews, C., ... & Cunningham, A. L. (2022). The adjuvanted recombinant zoster vaccine confers long-term protection against herpes zoster: interim results of an extension study of the pivotal phase 3 clinical trials ZOE-50 and ZOE-70. *Clinical Infectious Diseases*, 74(8), 1459-1467.

- [8] Vogelsang, E. M., & Polonijo, A. N. (2022). Social determinants of shingles vaccination in the United States. *The Journals of Gerontology: Series B*, 77(2), 407-412.
- [9] Patil, A., Goldust, M., & Wollina, U. (2022). Herpes zoster: a review of clinical manifestations and management. *Viruses*, 14(2), 192.
- [10] Badur, S., Senol, E., Azap, A., Yesiloglu, C., Ozakay, A., Ozturk, S., & Guzman-Holst, A. (2023). Herpes Zoster Burden of Disease and Clinical Management in Turkey: A Comprehensive Literature Review. *Infectious Diseases and Therapy*, 1-18.
- [11] Sun, X., Wei, Z., Lin, H., Jit, M., Li, Z., & Fu, C. (2021). Incidence and disease burden of herpes zoster in the population aged ≥ 50 years in China: data from an integrated health care network. *Journal of Infection*, 82(2), 253-260.
- [12] van Oorschot, D., Vroiling, H., Bunge, E., Diaz-Decaro, J., Curran, D., & Yawn, B. (2021). A systematic literature review of herpes zoster incidence worldwide. *Human Vaccines & Immunotherapeutics*, 17(6), 1714-1732.
- [13] Guzman-Holst, A., Cervantes-Apolinar, M. Y., Favila, J. C. T., & Huerta-Garcia, G. (2023). Epidemiology of herpes zoster in adults in Mexico: a retrospective database analysis. *Infectious Diseases and Therapy*, 12(1), 131-141.
- [14] Piazza, M. F., Paganino, C., Amicizia, D., Trucchi, C., Orsi, A., Astengo, M., ... & Ansaldi, F. (2020). The unknown health burden of herpes zoster hospitalizations: the effect on chronic disease course in adult patients ≥ 50 years. *Vaccines*, 8(1), 20.
- [15] Hanieh, A. (2018). *Money, markets, and monarchies: The Gulf Cooperation Council and the political economy of the contemporary Middle East* (Vol. 4). Cambridge University Press.
- [16] Badur, S., Ozudogru, O., Khalaf, M., Ozturk, S., Albreiki, S., Al Awaidey, S., & Guzman-Holst, A. (2023). Epidemiology of varicella zoster virus and herpes zoster virus in gulf cooperation council countries: a review of the literature. *Infectious Diseases and Therapy*, 12(1), 81-93.
- [17] Winthrop, K. L., Tanaka, Y., Lee, E. B., Wollenhaupt, J., Al Enizi, A., Azevedo, V. F., & Curtis, J. R. (2022). Prevention and management of herpes zoster in patients with rheumatoid arthritis and psoriatic arthritis: a clinical review. *Clin Exp Rheumatol*, 40(1), 162-172.
- [18] Sanchez, L. M., Martinez, P. M., García, E. G., Noves, A. T., Castro, D. R., Barcena, C. R., ... & Ivorra, J. R. (2023). AB1587 EXPERIENCE IN REAL-WORLD CONDITIONS OF THE EFFECTIVENESS OF THE VACCINE AGAINST HERPES ZOSTER.
- [19] Al Kaabi, N., Al Olama, F. M. A. S., Al Qaseer, M., Al Ubaidani, I., Dinleyici, E. C., Hayajneh, W. A., ... & Wolfson, L. J. (2020). The clinical and economic burden of varicella in the Middle East: a systematic literature review. *Human Vaccines & Immunotherapeutics*, 16(1), 21-32.
- [20] Schmidt, S. A., Vestergaard, M., Baggesen, L. M., Pedersen, L., Schønheyder, H. C., & Sørensen, H. T. (2017). Prevacination epidemiology of herpes zoster in Denmark: quantification of occurrence and risk factors. *Vaccine*, 35(42), 5589-5596.
- [21] Tricco, A. C., Zarin, W., Cardoso, R., Veroniki, A. A., Khan, P. A., Nincic, V., ... & Straus, S. E. (2018). Efficacy, effectiveness, and safety of herpes zoster vaccines in adults aged 50 and older: systematic review and network meta-analysis. *bmj*, 363.
- [22] Chen, L. K., Arai, H., Chen, L. Y., Chou, M. Y., Djauzi, S., Dong, B., ... & Won, C. W. (2017). Looking back to move forward: a twenty-year audit of herpes zoster in Asia-Pacific. *BMC infectious diseases*, 17(1), 1-39.

- [23] Alhaid, A., Alhaddad, A., Alramadhan, M., Al-Ramdhan, A., Bujubarah, A., & Alsaad, H. (2023). Prevalence and awareness of Herpes Zoster Among Saudi Patients with Diabetes Mellitus, A Cross Sectional Study in Al-Ahsa, Saudi Arabia. *World Journal of Current Medical and Pharmaceutical Research*, 123-130.
- [24] Roh, N. K., Park, Y. M., Kang, H., Choi, G. S., Kim, B. J., Lee, Y. W., ... & Sim, W. Y. (2015). Awareness, knowledge, and vaccine acceptability of herpes zoster in Korea: a multicenter survey of 607 patients. *Annals of Dermatology*, 27(5), 531-538.
- [25] Yawn, B. P., Merrill, D. D., Martinez, S., Callen, E., Cotton, J., Williams, D., & Loskutova, N. Y. (2022). Knowledge and attitudes concerning herpes zoster among people with COPD: an interventional survey study. *Vaccines*, 10(3), 420.
- [26] Curran, D., Callegaro, A., Fahrback, K., Neupane, B., Vroiling, H., van Oorschot, D., & Yawn, B. P. (2022). Meta-regression of herpes zoster incidence worldwide. *Infectious Diseases and Therapy*, 1-15..
- [27] Alhothali, O. S., Alhothali, A. S., Hanif, A. A., Bondagji, M. F., Aljabri, H. M., Goweda, R., ... & Bondagji Sr, M. (2023). A Cross-Sectional Study of the Knowledge, Practice, and Attitude Towards Herpes Zoster Vaccination Among the General Population in the Western Region of Saudi Arabia. *Cureus*, 15(1).
- [28] Al-Orini, D., Alshoshan, A. A., Almutiri, A. O., Almreef, A. A., Alrashidi, E. S., Almutiq, A. M., ... & Al-Wutayd, O. (2023). Acceptability of Herpes Zoster Vaccination among Patients with Diabetes: A Cross-Sectional Study in Saudi Arabia. *Vaccines*, 11(3), 651.
- [29] Al-Khalidi, T., Genidy, R., Almutawa, M., Mustafa, M., Adra, S., Kanawati, N. E., ... & Barqawi, H. J. (2022). Knowledge, attitudes, and practices of the United Arab Emirates population towards Herpes Zoster vaccination: A cross-sectional study. *Human Vaccines & Immunotherapeutics*, 18(5), 2073752.
- [30] Wang, Q., Yang, L., Li, L., Liu, C., Jin, H., & Lin, L. (2023). Willingness to Vaccinate Against Herpes Zoster and Its Associated Factors Across WHO Regions: Global Systematic Review and Meta-Analysis. *JMIR Public Health and Surveillance*, 9, e43893.
- [31] Khan, N., Trivedi, C., Kavani, H., Lewis, J., & Yang, Y. X. (2019). Frequency of herpes zoster vaccination among inflammatory bowel disease patients. *Inflammatory Bowel Diseases*, 25(2), 345-351.