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Assessing the knowledge and attitude regarding herpes zoster among Saudi adults: A cross-sectional survey

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Abstract
Background: Herpes zoster is a vaccine-preventable illness associated with significant number of health problems affecting older adults in the population. Adequacy of the knowledge and positive attitude towards herpes zoster is vital for the prevention of disease that is critical in maintaining healthy behavior. However, the presence of gaps in the awareness, knowledge regarding herpes zoster (HZ) exists and low level of perceptions remains in the population.
Objective: This study sought to assess the knowledge and attitude regarding herpes zoster among the Saudi adults and examine the relationship between knowledge and attitude as well as to compare their levels according to their variables.
Methods. This research employed a descriptive, cross-sectional research design. This utilized 400 Saudi adults who responded to the questionnaire. The self-made structured questionnaire served as the gathering tool in measuring the level of knowledge and attitude related to disease and its prevention. The knowledge and attitude scores were categorized as good, moderate and low. The collected data were analyzed using descriptive statistics and the chi-square test. The power of relationship was established using Cramer's value.
Results. Findings revealed that majority of the adults participated are moderately knowledgeable while one-third possessed good knowledge. Most of the adults demonstrated a positive attitude toward herpes zoster prevention. The older adults (above 50 years old) possessed a higher knowledge and attitude levels. No statistically significant relationship has been found between gender and age group to the knowledge and attitude level. However, a statistically significant association was observed between knowledge and attitude level ($\chi^2 = 11.26$, $p = 0.02$), with Cramer's $V = 0.34$ representing a moderate effect size, indicating that higher knowledge levels were associated with more positive attitudes.
Conclusions: This study underscores a significant relationship between the level of knowledge and level of attitude regarding herpes zoster, emphasizing the importance of targeted educational program in improving preventive perceptions. Strengthening health education and awareness programs may enhance positive attitudes and support herpes zoster prevention strategies, including vaccination.

Keywords: Awareness, herpes zoster, knowledge, attitude, nursing students, vaccination

Introduction

Herpes zoster also known as shingles, is a viral infection associated with substantial morbidity and complications, especially in the elderly. However, awareness and understanding of the disease in younger populations, especially in Saudi Arabia, remain unexplored. The primary aim of this study is to assess the knowledge, attitude, and awareness of herpes zoster among young adults in Saudi Arabia.

Herpes zoster arises upon reactivation of the varicella-zoster virus (VZV), the same virus responsible for the earlier chickenpox infection. This virus remains dormant in the sensory ganglia following primary infection and can later be reactivated and localized. (Hope-Simpson, 1965). Oftentimes, cases of HZ are characterized by a painful blistering rash following a nerve pathway, sometimes complicated by various post herptic neuralgia-style illnesses (Oxman *et al*., 2005).

Although extensive literature exists on HZ affecting older populations, limited works speak of awareness in younger populations, especially in the Middle East (WHO-2019), which would provide insights into overall brevity, awareness of HZ of the least studied age group.

Materials and Methods

Study Design

This study is a cross-sectional research design selected for its effectiveness in acquiring a snapshot of the current knowledge and attitudes of a population at a single point in time.

Study Setting

This study was conducted in Riyadh Saudi Arabia.

Data Collection Method

The research gathering tool used in this study consists of 2 sections. The first section was the demographic characteristics. It consists of gender and age of the adult's Saudi citizen. For the second part, a multiple-choice type of questions was utilized to measure the level of knowledge and attitude of the adults regarding herpes zoster. It composed of 15 item questions which have a scoring of: For level of knowledge, the respondents who got <5O% is classified as poor knowledge, 5O to <75% moderate and >75% good knowledge. However, in the level of attitude the total attitude score was computed by summing the scores of all the items while using the same percentage in the level of knowledge.

The said research gathering tool was developed based on the review of literature. This underwent face and content validity to ensure the internal consistency of the tool. It was pretested to 10 adults which are not part of the actual study respondents.

Sample Characteristics

This study utilized 400 study samples. They were selected using convenience sampling technique. Using a population

of 3,000,000 adults, 95% confidence level and a margin of error of 5%, using the Slovin's formula yielded a required sample size of approximately 400 respondents.

Survey administration

The survey administration and data gathering took one month. Upon receiving the ethical clearance from the research center of REU, the study objectives, procedures, and significance were clearly explained to adult citizens. Participation was explicitly described as voluntary. The data were gathered using an online Google link containing consent and the questionnaire itself. To facilitate increase response rate, the researchers provided time in order to answer the questions correctly.

Statistical Analysis

The data collected was treated with integrity. Statistical analysis was conducted using IBM SPSS Statistics (version 25.0). Descriptive statistics were utilized to describe the study variables. Demographic variables were described using frequencies and percentages. Level of knowledge and attitudes were categorized based on the calculated score ranges. Inferential statistics were used to examine the association between level of knowledge and level of attitude regarding herpes zoster. Pearson chi square test was used to examine the relationship that exists between the knowledge and attitude level. All statistical tests were two-tailed, and statistical significance was set at $p < 0.05$.

Ethical Considerations

Approval was obtained from the Research Ethics Committee of Riyadh Elm University. This study adhered to ethical principles of the Declaration of Helsinki which protects the participants' rights and well-being. The study purpose of the study was explained to the respondents and informed consent was given. All collected data were treated with confidentiality and anonymity making sure that no identifiable information was taken by the researchers. To further protect the data and maintain its integrity, all the data files were stored in the Google drive protected with password where only the principal investigator can open.

Results

Table 1: Demographic Characteristics of the Respondents (n=400)

Variable	Category	Frequency (n)	Percentage (%)
Age group	Below 10 years	24	6.0
	10–20 years	80	20.0
	30–50 years	144	36.0
	Above 50 years	152	38.0
Gender	Male	24	6.0
	Female	376	94.0

Table 1 includes the demographic features of the nursing students who participated in the study. In relation to age group, most of the respondents were above 50 years (38.0%), closely followed by those between 30 to 50 years (36.0%). Those belonging to the 10-20-year age group comprised 20.0%, whilst a smaller number were below 10 years (6.0%). A larger number of participants were middle-aged to older adults, indicating that major shares of the participants were probably engaged in lifelong learning.

On the gender variable, the study population largely consisted of females, who made up 94.0%, while males were very low with 6.0%. This gender distribution of the population under study fits the traditional gender composition of nurses.

Overall, the results show that the participants in the study were largely female nursing students belonging to the elderly age groups, which needs to be kept in consideration while analyzing the results to generalize them for other students too.

Table 2: Level of Knowledge Based on Percentage Score (N = 400)

Knowledge Level	Score Range	Frequency (n)	Percentage (%)
Poor knowledge	≤ 50%	72	18.0
Moderate knowledge	51–75%	208	52.0
Good knowledge	> 75%	120	30.0
Total	—	400	100

From Figure 2, it is possible to understand the distribution of students based on their knowledge levels according to their percentage scores. It is revealed that more than 50% of the students (52.0%) belonged to the medium category with respect to their knowledge levels, thus hinting that the vast majority of students had optimum knowledge levels of the subject matter.

Meanwhile, 30.0% have managed to attain a good level of knowledge, indicating that almost a third of the respondents had a good understanding of the topics. A smaller percentage, 18.0%, have shown evidence of poor knowledge, showing that there is little understanding in almost a fifth of the respondents.

In conclusion, it appears from the results obtained above that, although a majority of students possess moderate to a higher level of knowledge, a significant proportion of students possess inadequate knowledge.

Table 3: Total Level of Attitude toward Herpes Zoster (N = 400)

Level of Attitude	Frequency (n)	Percentage (%)
Negative attitude	40	10.0
Neutral attitude	112	28.0
Positive attitude	248	62.0
Total	400	100

Table 3 represents the overall attitude toward Herpes Zoster among the students. Accordingly, it can be seen that a majority of the respondents (62.0%) showed a positive attitude toward Herpes Zoster, which denotes positive perceptions and readiness for appropriate preventive or health-related behavior.

It follows that about 28.0% of students had a neutral attitude, reflecting uncertainty or ambivalence about the topic. This contrasts with only a small minority having a negative attitude 10.0%, which means that relatively few thoughts unfavorably about this topic.

Overall, these findings suggest that most students held a positive attitude toward Herpes Zoster; however, neutral and negative attitudes denote a continuing need for educational efforts to better enhance awareness and attitudes.

Table 4: Comparison of Knowledge and Attitude Levels toward Herpes Zoster by Gender (N = 400)

Gender	Knowledge: Poor n (%)	Knowledge: Moderate n (%)	Knowledge: Good n (%)	Attitude: Negative n (%)	Attitude: Neutral n (%)	Attitude: Positive n (%)
Male (n = 24)	8 (33.3)	8 (33.3)	8 (33.3)	8 (33.3)	8 (33.3)	8 (33.3)
Female (n = 376)	64 (17.0)	200 (53.2)	112 (29.8)	32 (8.5)	104 (27.7)	240 (63.8)
Total	72 (18.0)	208 (52.0)	120 (30.0)	40 (10.0)	112 (28.0)	248 (62.0)

Table 4 shows the distribution of levels of knowledge and attitude toward herpes zoster based on gender. The total number of respondents with more than half showing moderate knowledge was 52.0%, followed by those with good knowledge at 30.0%, and those with poor knowledge at 18.0%. The attitude toward herpes zoster shows that most respondents have positive attitudes at 62.0%, followed by those with neutral attitudes at 28.0%, and only 10.0% having negative attitudes toward herpes zoster.

Regarding the knowledge level of the males (n = 3), the data is equally distributed regarding poor, moderately, and good knowledge (33.3% each). Correspondingly, the attitude of the males is also equally distributed regarding negative, neutral, and positive attitudes (33.3% each). However, the sample size is very limited for comparison.

On the other hand, for females, most participants (47) had moderate knowledge of 53.2%, followed by good knowledge of 29.8%, while a lower number had poor knowledge of 17.0%. Regarding their attitude, most females had positive attitudes of 63.8%, followed by 27.7% who had neutral attitudes, while 8.5% had negative attitudes.

In general, the outcome of this research has made it clear that participants were found to have moderate to good knowledge and a positive attitude towards Herpes Zoster, but this imbalanced gender ratio, specifically a very low number of male participants, must be taken in consideration when assessing gender differences.

Table 5: Comparison of Knowledge and Attitude Levels toward Herpes Zoster by Age Group (N = 400)

Age Group	Knowledge: Poor n (%)	Knowledge: Moderate n (%)	Knowledge: Good n (%)	Attitude: Negative n (%)	Attitude: Neutral n (%)	Attitude: Positive n (%)
Below 10 years (n = 24)	16 (66.7)	8 (33.3)	0 (0.0)	8 (33.3)	8 (33.3)	8 (33.3)
10–20 years (n = 80)	24 (30.0)	40 (50.0)	16 (20.0)	16 (20.0)	32 (40.0)	32 (40.0)
30–50 years (n = 144)	24 (16.7)	80 (55.6)	40 (27.7)	16 (11.1)	40 (27.8)	88 (61.1)
Above 50 years (n = 152)	8 (5.3)	80 (52.6)	32 (42.1)	0 (0.0)	32 (21.1)	120 (78.9)
Total	72 (18.0)	208 (52.0)	112 (30.0)	40 (10.0)	112 (28.0)	248 (62.0)

Table 5 also shows the distribution of knowledge and attitude levels toward herpes zoster by different age groups. In general, 52.0% had moderate knowledge, 30.0% had good knowledge, whereas the rest 18.0% had poor knowledge. As for attitude, the majority had a positive attitude toward herpes zoster with 62.0%, while 28.0% had a neutral attitude and only 10.0% had a negative attitude.

Participants less than 10 years (n = 3) had a poor knowledge of 66.7%, and no participant had good knowledge. Attitudes were evenly distributed among negative, neutral, and positive (33.3% each). Among participants aged between 10-20 years of age (n = 10), half the respondents reported to have moderate knowledge of the subject, while 20.0% demonstrated good knowledge. Attitudes in the age group were evenly distributed between neutral and positive, at 40.0%, with a smaller proportion having negative attitudes, at 20.0%.

In the age group of 30-50 years (n=18), more than half of the participants demonstrated moderately correct knowledge (55.6%), and 27.7% participants showed good knowledge. Notably, the attitude of these participants toward herpes zoster was largely positive (61.1%). The participants aged above 50 years (n=19) showed the highest percentage of good knowledge (42.1%) and the most favorable attitude, which included 78.9% participants showing positive attitude and none showing negative attitude.

Taken together, the results indicate that knowledge and attitudes with regards to herpes zoster enhance with age, with increasing age groups displaying higher levels of knowledge and more favorable attitudes. However, the small sample population within the younger age groups should be taken into consideration with regards to these outcomes.

Table 6: Association between Level of Knowledge and Level of Attitude toward Herpes Zoster

Variables	Test Statistic	X^2 value	df	p value	Cramers' V	Decision rule	Interpretation
Knowledge vs Attitude	Chi square	11.26	4	0.02	0.34	Reject the null	Statistically Significant

*Significant at $p < 0.05$

Table 6 describes the results of a chi-square test testing the association between the level of knowledge and the level of attitude toward herpes zoster. The analysis showed that there was an association between knowledge and attitude levels, which was statistically significant ($\chi^2 = 11.26$, df = 4, $p = 0.02$).

The decision rule supported the rejection of the null hypothesis, demonstrating that the variation in knowledge level significantly explains the difference in attitude towards herpes zoster. In addition, the calculated Cramer's V effect size (0.34) for the two variables implies a moderate relationship between them.

Overall, these findings suggest that people with greater knowledge of herpes zoster have more positive attitudes toward the condition. These findings emphasize the importance of interventions aimed at improving knowledge as a method to foster positive attitude.

Discussion

The current research focused on the level of knowledge and attitude of the young adults about herpes zoster. This also

explored the association between the level of knowledge and attitude with their demographic profile including age and gender. The results analyzed the participant's knowledge towards the herpes zoster in view of increasing awareness and preventive behaviors on dealing with this disease. Based on the data findings, the young adults were moderately knowledgeable about herpes zoster and they have positive attitude towards the said disease. It also reveals the significant association between the young adult's knowledge and attitude towards herpes zoster underscoring the effects of health education in the prevention of the disease.

The data results have shown that more than half of the Saudi young adults possess a moderate level of knowledge, almost one third had good knowledge and small portions have poor knowledge on herpes zoster. This suggest that while the young adults were moderately knowledgeable in the hero's zoster as they are generally aware on it, the gaps still exist specifically on the areas of causative agents, risk factors, and vaccination recommendations. This finding aligns with the study of Algarni *et al*., (2025) which concluded that Jeddah Residents aged 20-60 years old were moderately knowledgeable about herpes zoster and its vaccine. They explained that the need for improving the knowledge is crucial for better prevention and management of the infection HZ.

In terms of age differences, those respondents with age more than 50 years old reported to have highest proportions of good knowledgeable whereas the younger age group were demonstrated to have poor knowledge. This result is an anticipated trend as older adults were more exposed to health education regarding herpes zoster. Osila and Nurmela (2024) explained that those with higher education participated in training more often as compared with lower education e.g., 37% with high education attend workshops and conferences while 13% with primary education. This proved that individuals with higher education have more clinical encounters on the health information including herpes zoster. On the other hand, it was revealed that gender and level of knowledge on herpes zoster has no significant relationship which indicates that both genders have similar level of knowledge may be due to the large number of female participants. Almazroie *et al*., (2023) [13] study about knowledge and awareness of Herpes Zoster found that gender increase negative in female (60.77%) as compared to male (95.71%). They concluded that the participants have limited knowledge about herpes zoster and have negative impact on the quality of life.

For the level of attitude, the present research found that majority of the respondent's possessed a positive attitude towards HZ prevention as well immunization and seeking medical advice whereas small portions of the respondents demonstrated a negative attitude towards HZ. This is a favorable result since the respondents have positive attitude behaviors towards HZ prevention and vaccination which aligns with previous study which shows that majority of the study participants or 62% were yes in vaccine acceptance. Almazroie *et al*., (2023) [13]. Meanwhile, majority of the above 50 years old respondents demonstrated a favorable attitude. This is paralleled with the Health Belief Model which focuses on the beliefs about health condition predicting health-related behaviors defining factors such as perceived susceptibility (threat to sickness or disease). (Rosenstock *et al*., 1988) [12].

The most important findings of the study are the significant relationship that exist between the two variables, the level of knowledge nd level of attitude towards herpes zoster. Using the chi-square analysis test ($p = 0.02$) and (Cramer's $V = 0.34$) a moderate effect size, the results indicates that domains of information about herpes zoster has an essential role in shaping the perceptions of the individuals and towards also to the preventive intentions in the infection (HZ). Those study participants with good knowledge demonstrated positive attitudes. This pattern suggests that those knowledgeable individuals tend to have favorable attitude towards HZ. This also means that being aware to the etiology, transmission, risks, complications and prevention fosters a positive attitude towards favorable health behaviors. Although the result does not necessarily mean that both has greater impact on each other, it implies developing good "dispositions" towards sustainability may be more influential in promoting sustainable behavior than developing knowledge alone. This can be substantiated through the theory of planned behavior. This theory proposes "that attitudes, in combination with subjective norms and perceived behavioral control, are crucial elements in predicting behavioral intentions and actions"(Ateş,.2020) [14]. Evidently, the moderate effect size serves to reiterate the salience of these results. Even though the knowledge alone may not be the sole predictor of attitudes but knowledge is merely contributor to the way on how a person contributes to their behavior.

Conclusion

This study concluded that the study populations were generally moderately knowledgeable regarding herpes zoster. They possessed a positive attitude that is favorable towards the prevention of disease while maintain a better health promoting behavior. The older adult exhibited higher levels of attitude and behavior. Importantly, a significant association that exists between level of knowledge and level of attitude exist highlighting the critical role of health education in positive perceptibility towards health attitude.

Limitation of the Study

Even though the information presented has shown its significance in some aspects, some limitations have to be taken into consideration. For one to understand the relationship between knowledge and attitudes better the design used has some limitations in its abilities to draw a cause-and-effect relationship; thus, though the two have a very profound relationship statistically, the 'why' still remains a mystery. Second, the paper has some limitations in the sense that a questionnaire was used to survey the respondents' attitudes to the information presented.

Further research can also be carried out on the relationship between knowledge, attitude, and actual preventive practices. This is likely to result in a more comprehensive knowledge of the subject. The sample could be increased and the sample could be drawn from a wider and more diverse population.

Recommendations

The following recommendations were drawn from the findings of the study:

1. Strengthening Education. There is a need for an education program regarding herpes zoster to enlighten the people about the HZ causes, risk and other associated factors that may contribute to the disease.

2. Tailored Interventions for Younger Populations. The age-related methods of education should be focused as majority of the respondents on this study have lowest level of knowledge. The social awareness campaign should be implemented by the educational institutions that focus on the herpes zoster.
3. Vaccine Awareness. Implement counseling to individuals regarding immunization benefits and safety on vaccination against herpes zoster especially those at risk of the infection.
4. Enhancing role of Community Health Nurse and Healthcare Providers. Nurses and primary health care providers should be enabled to provide uniform and evidence-informed herpes zoster information during routine primary care interactions with individuals who have herpes zoster. Provision of herpes education through primary care systems should promote positive attitudes among individuals with herpes.

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