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PATTERN AND DETERMINANTS OF KNOWLEDGE, ATTITUDE AND PRACTICE OF THE POPULATION TOWARDS HERPES ZOSTER AND ITS VACCINATION AMONG THE POPULATION IN JEDDAH, KSA

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Abstract

Background: Herbs Zoster occurs due to the reactivation of the latent virus (VZV). It has been approved that vaccination against herbs zoster of those aged 50 years and older, to prevent post herpetic neuralgia. **Objectives:** The aim is to study pattern and determinants of knowledge, attitude and practice of the population towards Herpes Zoster disorder, and its vaccination among the population in Jeddah, KSA. **Methodology:** A cross-sectional study was conducted among 240participants who were selected by non-probability, convenience. SPSS was used to analyze the data. **Result**: The overall score of the knowledge of the public towards herbs zoster disease and its vaccine was far substandard (8.3%), While their overall score of the attitude towards the herbs zoster and its vaccine was little bet better (35%). Majority of the participants (85%) did not know the risk of having herpes zoster during lifetime. A great proportion (72%) of the respondents did not realize the link between chicken pox and herpes zoster. Only 26.3% of the participant had heard about the Herbs zoster vaccine.. There was significant positive correlation between the overall scores on knowledge and attitude towards the herbes zoster and its vaccine ($r=.352, <0.05$). A minority (3.8%) of the participants got the herbs zoster vaccine. Those who did not get the vaccine, was because, they were neutral towards its importance, or they did not realize that it was existing (36.7%). Majority of the participants would get shingles vaccine if their doctors recommended it. **Conclusion:** The participants had extremely limited understanding of HZ and its vaccine. Their attitudes toward the HZ vaccine were substandard; however, poor practices among them were observed. We recommend that health education programs should be conducted by the health care personnel, for the public, particularly about the health adverse effects of shingles, its risk factors and availability of vaccines for its prevention. Primary health care physicians should be motivated to emphasize on the importance of herbs zoster vaccination to the public.

Keywords: Herpes zoster, vaccine; knowledge, attitude and practice; Saudi Arabia.

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Introduction

Herpes zoster (HZ), popularly known as shingles, is a painful dermatomal vesicular disease that develops as a result of the latent varicella-zoster virus (VZV) whose being reactivated in the nerve ganglia as result of decreased immune system against the VZV (1). After 3–4 weeks, the discomfort and skin eruptions typically go away (2). Older age over 50, immunosuppression, diabetes mellitus, malignancy, and HIV infection are the key risk factors for HZ (1). HZ exhibits a dermatomal-distributed rash, vesicular eruption associated with severe form of neuropathic pain (3) .Other complications including HZ encephalitis, meningitis, and ocular affection. All of these complications have a negative impact on the quality of life of patients (1).Regarding management, Antiviral medication, including acyclovir can be used to treat active HZ(4) . Additionally, vaccination against HZ is recommended as primary prevention specially for positive risk factors groups. There are two herpes zoster vaccines: Shingrix (recombinant zoster vaccine) and Zostavax (live attenuated varicella-zoster vaccine). The role of vaccine is preventing herpes zoster itself, avoiding latent HZ reactivating in people who have already had VZV and avoiding further complications from HZ specially sever neurological complications such as post-herpetic neuralgia (4) . Several previous studies revealed that the participants' knowledge of HZ infection and its vaccine were substandard, however, the observed attitudes were positive as participants were willing to vaccinate themselves against HZ if recommended by health care providers (5, 6). Several previous studies revealed that the main obstacles for the growing acceptance towards vaccination were the high cost and low perceived risk, they also concluded that a physician's recommendation could reverse around 70% of vaccine refusals (1, 7). Most of the previous studies concluded that future studies to evaluate the awareness of population about HZ vaccine are crucial. Thus in the present study we aimed to assess the knowledge, attitude and practice of the population in Saudi Arabia towards the HZ infection and the acceptance of its vaccination.

Methodology

Study design and sampling method : This research was a cross-sectional study conducted in Jeddah City, Saudi Arabia. During the period October 2023 to February 2024, using a nonprobability convenient sampling method. The sample size calculated sing G-Power software The calculation indicated that a total of 220 participants would provide an optimal sample size. This figure was derived considering. an effect size= 0.3, alpha= 0.05, power=0.95 and degree of freedom= 5. For the present study the enrollment number 240 subjects. The sampling technique was non-probability convenient one. Data Collection Method: Following ethical approval from IRRB of Ibnsina National college for health sciences, data were collected using an online questionnaire distributed via Google Forms. A valid questionnaire was used, featured closed-ended questions, including true/false, and don't know multiple-choice, and Likert scale items. (5,8) These questions were designed to gather demographic information and assess participants' knowledge towards HZ infection(8 questions), and towards knowledge about HZ vaccine (7 questions), towards attitudes (7 Questions), and practices (4 Questions) regarding shingles and its vaccination. Informed consent was obtained from each participant before administering the questionnaire. Statistical Analysis: The final responses were compiled and initially reviewed in an Excel file, after which the data was transferred to version 23 of the Statistical Package for Social Sciences (SPSS). Regarding knowledge assessment, each correct response was assigned a score of 1, and the total score for all individual items was calculated. The overall knowledge score was classified into either poor knowledge level (for scores less than 60% of the total possible score), or good for scores equal to or above 60 of the total possible score. Logistic regression analysis was used to assess the impact

of the participants' demographics, medical data, and history of HZ disease, on the over all knowledge of the subjects towards HZ disease and its vaccine (the beta, OR, and 95%CI, and p values were calculated). Additionally, the participants' responses on the questions regarding KAP on HZ and its vaccine were tabulated. The overall knowledge level and sources of information were represented graphically. All statistical analyses conducted were two-tailed, with level of significance was set at 0.05. The significance of the differences was assessed based on P values equal to or less than 0.05.

Ethical Considerations: The study was conducted after receiving ethical clearance from Ibnsina National College with IRRB approval number: IRRB-01-29102023. Participant confidentiality was a priority, with data securely stored on a password-protected device accessible only to the principal investigators and authorized personnel. All participant information was anonymized and handled with strict confidentiality.

Results

The present study included 240 subjects (87.9% females and 12.1% males). The mean age of the studies subjects was 26.8 years old (SD=9.52); majority of the participants were Saudis (86.3%), and were single (70.4%). Chronic diseases were found in 18% of the participants. The majority of the studied subjects (92%) had poor level of knowledge towards the HZ disorders and its vaccine (fig.1), with mean knowledge level score of 31% ± 23%. The level of the attitude score of the studied subjects towards HZ and its vaccine was also substandard (65% had poor total attitude score) withmean of 46% ± 27%. (Fig. 2) Results about logistic regression in table 1, reveal that the sociodemographic characteristics and having history of chronic diseases or past infection with varicella virus were not significant predictors of the knowledge score towards HZ disease and its vaccine ($p > 0.05$). Similar results were observed on the logistic regression output for the association of the sociodemographic characteristics and clinical history with the attitude level towards HZ and its vaccine. However, working as health care profession was almost 3 times more likely to have better attitude towards HZ and its vaccine compared with the non-health care workers (b= - 1.11, OR= 0.329; $p <0.028$) as shown in table 2. There was significant correlation between the overall knowledge score and the overall attitude score towards HZ and its vaccine among the studied subjects ($r=0.350$, $p<0.000$). However, both Attitude and knowledge scores were not correlated with the age of the studied subjects, where r= 0.059, and -0.068, respectively; $p> 0.05$. (Table 3).

A small proportion of the subjects (23.7%) heard about chicken pox before, and Majority of the subjects (85%) did not know that the life time risk of having HZ. Responses of the subjects on the questions about the clinical aspects of HZ reflected their low level of knowledge about the disease. (Table 4)

The responses of the subjects towards questions on the knowledge towards the HZ vaccine are included in table 5. The majority of the subjects, also, responded by I did not know, or selected the wrong answers. Table 6 displays the responses of the studied subjects on the questions regarding the attitude towards the prevention of HZ disorder. Majority of the studied subjects agreed that HZ disorder had significant effect on human health; however, they admitted that they had no adequate understanding of HZ, and they were interested to know more about HZ and about channels for its prevention. They were not worried about getting the disease. Majority of the subjects mentioned that they could not afford HZ vaccination. Table 7 reveals the responses on questions addressing the practice of the studied subjects towards the HZ vaccine. Very few subjects got the HZ vaccine (3.1%). However, Majority agreed that they would get the vaccine if the doctor

recommended it. Majority of the subjects were neutral about the cost of the vaccine. The majority admitted that they did not get the HZ vaccine because they felt that they were healthy, and many of the studied subjects did not know that the vaccine existed.

Discussion

The present study was conducted to investigate the pattern and determinants of knowledge, attitude and practice towards Herpes Zoster and its Vaccination Among the Population in Jeddah, KSA. The findings from the present study revealed substandard knowledge.

Our findings revealed considerable gaps in knowledge, and low vaccine uptake, a trend consistent with global observations. Knowledge of HZ in the present study was low at 14.6 %, but misconceptions about transmission and prevention were common. Knowledge about the shingles vaccine was limited, with only 26.3% awareness and an overall poor knowledge level in 55% of participants. These results align with other Saudi studies, which also report limited knowledge about HZ and its vaccine, though regional variances exist. (5-8) In the present study, 65% were aware of HZ, but only 28.3% did recognize the connection between varicella and HZ. This was in line with findings from previous studies. (5, 8) This gap in understanding the full scope of the disease might suggest a common area for improving public education. Our study revealed also the significant gap in actual vaccine uptake, with

The study also showed that while 55.8% were familiar with the HZ vaccine, there was a significant gap in actual vaccine uptake, with 96.3% not having received the vaccine.

The present study also revealed that 32.9% of participants expressed reluctance to take optional vaccines, while a substantial 78% indicated willingness to receive the HZ vaccine if recommended by a healthcare professional. This was in line with findings from previous studies (5,7, 8) This highlights the potential impact of healthcare provider recommendations on vaccine uptake, a factor that might also play a crucial role in our society. In the present study, using logistic regression analysis we failed to find significant predictors of the level of knowledge and attitude towards HZ disorder and its vaccine. This is not in line with previous studies which found predictors including male gender, belief in vaccine effectiveness, and awareness of higher HZ risk in immuno-compromised individuals.(1, 6, 11) The present study revealed varied levels of vaccine awareness and willingness to vaccinate, with major barriers including cost concern (73%), and lack of health care recommendation (78%). This is in line with findings from previous studies (3,8). The present study revealed that the vast majority of the studied subjects (85%) did not have adequate understanding of HZ and its vaccine, in addition majority of them (76%) were interested in knowing more about HZ and about its prevention. This was in line with findings from previous studies (1, 5, 8). We recommend comprehensive public health initiatives to enhance awareness, correct misconceptions, and promote HZ vaccination. Key recommendations include targeted educational campaigns facilitated by healthcare providers, addressing specific demographic and cultural influences, and overcoming financial barriers. To bridge knowledge gaps, healthcare providers should play a pivotal role in disseminating accurate information about HZ and its vaccine. Tailoring interventions to address unique regional and demographic factors is crucial for maximizing the impact of awareness campaigns. Moreover, efforts should focus on dispelling misconceptions surrounding vaccine efficacy, addressing cost concerns, and emphasizing the importance of vaccination, particularly among high-risk populations. Our study contributes valuable insights into the knowledge, attitudes, and practices surrounding HZ and its vaccine within the studied population. The identified gaps in awareness and vaccine uptake emphasize the

need for targeted educational interventions to enhance understanding and promote vaccination among at-risk individuals. Additionally,
the role of healthcare professionals is highlighted as central to disseminating accurate information and addressing misconceptions.

Strength and Limitations

Firstly, this community study maked the findings particularly relevant for public health interventions in the community. The use of a structured online questionnaire, adapted from a previous study and distributed via Google Forms, ensures a comprehensive and systematic data collection process. This method not only facilitates a wide reach within the community but also allows for a detailed and nuanced assessment of knowledge, attitudes, and practices regarding HZ and its vaccine. However, the present study encounters several limitations. Primarily, the use of social media platforms for survey distribution may lead to selection bias, as it inherently favors respondents with internet access, potentially omitting perspectives from less digitally engaged individuals. This method, coupled with the reliance on self-reported data, introduces risks of recall and social desirability biases, where participants may inadvertently or deliberately misreport their experiences or views. The study's cross-sectional nature further limits its scope, capturing only a snapshot in time and precluding the analysis of causal relationships or temporal changes in attitudes and awareness. Additionally, the assumption of a homogenous target population might overlook nuanced differences in knowledge and attitudes influenced by unaccounted factors like socioeconomic or cultural diversity. Finally, the response rate, although considerable, did not meet the optimal sample size, potentially compromising the study's statistical robustness and the generalizability of its conclusions.

Future research recommendations

Future research should focus on developing targeted educational campaigns to enhance awareness and comprehension of HZ and its vaccine. Investigating the influence of cultural and demographic factors on vaccine acceptance, as well as understanding specific barriers and facilitators to HZ vaccine uptake, will provide valuable insights. Comparative studies across diverse regions, longitudinal research to track changes over time, and exploration of risk
perception in vaccine decision-making are crucial for a nuanced understanding. Additionally, global perspectives on HZ awareness and vaccination, along with the role of social media in disseminating information, should be investigated to inform evidence-based strategies for promoting vaccination awareness.

Conclusion

The study highlights a significant gap in knowledge and low vaccine uptake among the target population in Jeddah Saudi Arabia. It underscores the need for educational initiatives and awareness programs to improve understanding and acceptance of the HZ vaccine. These findings can inform healthcare providers and policymakers in developing strategies to enhance vaccination coverage and ultimately improve public health outcomes in the region.

Disclosure

Conflict of interest

There is no conflict of interest.

Funding

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Ethical consideration

The study was conducted after receiving ethical clearance from Ibnsina National College for medical studies with institutional review board approval number: IRRB-01-29102023.

Participant confidentiality was a priority, with data securely stored on a password-protected device accessible only to the principal investigators and authorized personnel. All participant information was anonymized and handled with strict confidentiality.

Data availability

The survey used is attached in the supplementary materials. All other data is embedded within the manuscript.

Author contribution

All authors contributed to conceptualizing, data drafting, collection and final writing of the manuscript.

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Fig. 1: Distribution of the studied subjects according to overall knowledge score on HZ and its vaccine

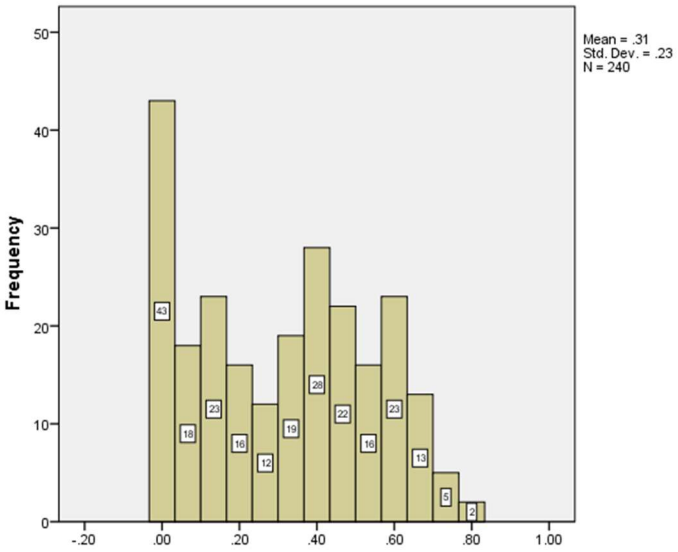


Fig. 2: Distribution of the studied subjects according to overall Attitude score on HZ and its vaccine

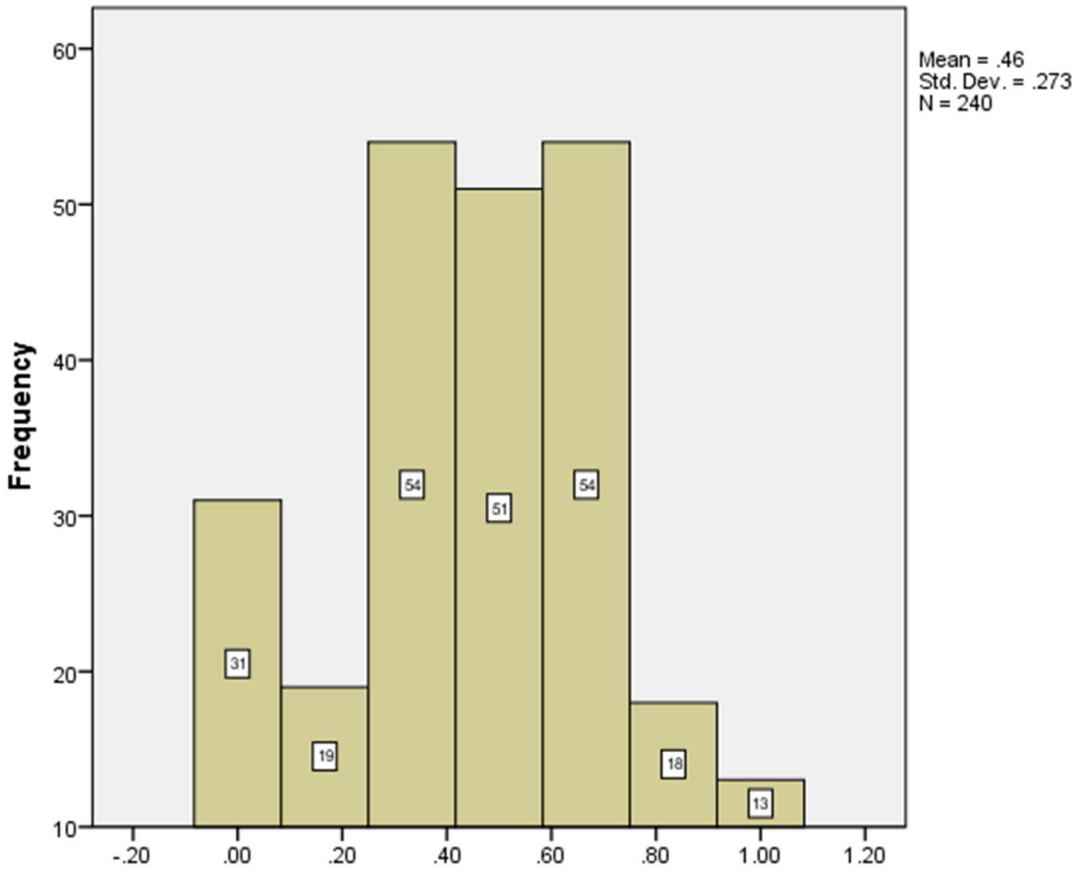


Table 1: Logistic regression relationship between sociodemographic characteristics and clinical condition with the overall Knowledge score towards HZ and its vaccine

Dependent variable: quality of knowledge towards HZ: poor vs good						
Independent variables	B	S.E.	Wald	df	Sig.	Exp (B)
Sex	-.126	.436	.083	1	.773	.882
Age groups	.012	.241	.003	1	.960	1.012
Nationality	-.333	.426	.613	1	.434	.716
Work in health care	.432	.375	1.330	1	.249	1.541
Having Chronic disease	.088	.400	.048	1	.827	1.092
Had chicken pox in past	.179	.325	.304	1	.581	1.196
Constant	-1.037	.918	1.276	1	.259	.354

Table 2: Logistic regression relationship between sociodemographic characteristics and clinical condition with the overall Attitude score towards HZ and its vaccine

Dependent variable: quality of attitude towards HZ: poor vs good						
Independent variables	B	S.E.	Wald	df	Sig.	Exp(B)
Gender	-.637	.665	.917	1	.338	.529
Age in years	-.138	.463	.089	1	.765	.871
Nationality	.459	.622	.544	1	.461	1.582
Work in health care	-1.111	.506	4.814	1	.028	.329
Having Chronic disease	.048	.694	.005	1	.945	1.049
Had chicken pox in past	-.330	.530	.387	1	.534	.719
Constant	-.683	1.515	.203	1	.652	.505

Table 3. Correlation matrix between age, attitude score and knowledge score of the participants

Correlations matrix

		Attitude score	Knowledge score	Age
Attitude score	Pearson Correlation	1	.350**	.059
	Sig. (2-tailed)		.000	.362
	N	240	240	239
Knowledge score	Pearson Correlation	.350**	1	-.068
	Sig. (2-tailed)	.000		.297
	N	240	240	239
Age	Pearson Correlation	.059	-.068	1
	Sig. (2-tailed)	.362	.297	
	N	239	239	239

**. Correlation is significant at the 0.01 level (2-tailed).

Table 4 . Distribution of the studied subjects (240) according to their knowledge towards Herpes Zoster disorder

Variables	Responses	Frequency	Percent
Have heard about HZ	No	161	76.3%
	Yes	50	23.7%
The lifetime risk of having HZ is up to 30%	No	9	3.8%
	Yes	35	14.6%
	DK	196	81.7%
Chickenpox, infection is a risk for having HZ	No	11	4.6%
	Yes	68	28.3%
	DK	161	67.1%
Immunocompromised is a risk for HZ	No	3	1.3%
	Yes	132	55.0%
	DK	105	43.8%
Young people will not have HZ	No	109	45.4%
	Yes	5	2.1%
	DK	126	52.5%
Extensive HZ rash is fatal	No	39	16.3
	Yes	24	10.0
	DK	177	73.8
HZ is a contagious disease	No	21	8.8
	Yes	76	31.7%
	DK	143	59.6%
symptoms of HZ	Rash	32	13.3%
	Rash, blisters	39	16.3%
	Rash, blisters, & pain	26	10.8%
	DK	134	59.6%
Do you think shingles can be prevented	No	8	3.3%
	yes	157	65.4%
	DK	75	31.3%

Table 5. Distribution of the studied subjects (240) according to their knowledge towards Herpes Zoster vaccine

Variables	Responses	Frequency	Percent
HZ vaccine can treat active HZ	No	28	11.7%
	yes	80	33.3%
	DK	132	55.0%
Age group approved for HZ vaccination	>18	8	3.3%
	>50	20	8.3%
	13-26	20	8.3%
	DK	138	57.5%
HZ vaccine can reduce the incidence of the disease by about 50%	No	5	2.1%
	yes	113	47.1%

	DK	122	50.8%
Shingles vaccine can cause shingles	No	66	27.5%
	yes	42	17.5%
	DK	132	55.0%
Have you heard of the shingles vaccine **	No	88	36.7%
	Yes (M>F)	63	26.3%
	DK	89	37.1%
Do you think shingles vaccine has any side effects	No	15	6.3%
	yes	101	42.1%
	DK	124	51.7%

Table 6: Distribution of the studied subjects (240) according to their attitude towards prevention of HZ

Variables	Responses	Frequency	Percent
I have adequate understanding of HZ	Agree	21	8.8%
	Disagree	68	28.3%
	Neutral	65	27.1%
	Strongly agree	12	5.0%
	Strongly disagree	74	30.8%
HZ has a significant effect on health	Agree	103	42.9%
	Disagree	12	5.0%
	Neutral	78	32.5%
	Strongly agree	31	12.9%
	Strongly disagree	16	6.7%
I am worried of having HZ	Agree	55	22.9%
	Disagree	42	17.5%
	Neutral	91	37.9%
	Strongly agree	23	9.6%
	Strongly disagree	29	12.1%
I am interested in knowing more about HZ	Agree	100	41.7%
	Disagree	11	4.6%
	Neutral	39	16.3%
	Strongly agree	81	33.8%
	Strongly disagree	9	3.8%
I have adequate channels in knowing how to prevent HZ	Agree	36	15.0%
	Disagree	75	31.3%
	Neutral	70	29.2%
	Strongly agree	43	17.9%
	Strongly disagree	16	6.7%
I am interested in knowing more about the prevention of HZ	Agree	101	42.1%
	Disagree	12	5.0%
	Neutral	42	17.5%
	Strongly agree	69	28.8%
	Strongly disagree	16	6.7%
I can afford the HZ vaccine:	Agree	37	15.4%

	Disagree	27	11.3%
	Neutral	136	56.7%
	Strongly agree	15	6.3%
	Strongly disagree	25	10.4%

Table 7: Attitude and practice of the participants towards the HZ vaccine

Variables	Responses	Frequency	Percent
Ever had the shingles vaccine?	No	231	96.3%
	yes	9	3.8%
I would get the shingles vaccine if the doctor recommended it	Agree	99	41.3%
	Disagree	18	7.5%
	Neutral	72	30.0%
	Strongly agree	40	16.7%
	Strongly disagree	11	4.6%
I worry about the cost of the vaccine	Agree	33	13.8%
	Disagree	45	18.8%
	Neutral	116	48.3%
	Strongly agree	19	7.9%
	Strongly disagree	27	11.3%
What would prevent you from getting the shingles vaccine?	I am concerned about the side effects of the vaccine	32	13.3%
	I am not at risk because I am healthy	79	32.9%
	I believe it is a waste of money	7	2.9%
	I did not know that the vaccine existed	88	36.7%
	I do not believe in vaccines	16	6.7%
	I would rather get medicine when I get sick	18	7.5%