Consumer Perceptions of a Shingles Infograph Intervention and Vaccination Plans in Community Pharmacy Settings

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Abstract

Background: *Cost and lack of knowledge are key barriers to improving shingles vaccination rates in community pharmacies. A health literacy (HL) tailored infograph intervention addressing these barriers can enhance consumer interest in shingles vaccinations.*

Objectives: *The objectives were to: 1) design a health literacy tailored shingles infograph addressing cost and knowledge about vaccination barriers, 2) determine consumer perceptions of infograph usefulness, and 3) determine factors associated with shingles vaccination plans.*

Methods: *An infograph addressing the study objectives, and a 22-item self-administered questionnaire assessing shingles vaccine awareness, HL, infograph usefulness, and vaccination plans were designed. The infograph was pilot tested with pharmacists and two community-based focus groups. Inclusion criteria consisted of age-eligible consumers at one chain and three independent community pharmacies. Consenting participants first reviewed the infograph and then completed the survey. Descriptive statistics and multivariable logistic regression analyses were performed.*

Results: *Of the 422 eligible consumers approached, 112 participated in the study, with 55.4% from the chain pharmacies. Participants were female (56%), white (94%), between 50-70 years old (77%), had adequate HL (96%) and aware of the shingles vaccine (87%). While only 8% of the respondents considered vaccinating on the survey date, 46% considered it in the future, and 29% planned to in the next six months. The infograph was useful (90%) in recognizing vaccination need, was readable (95.5%), and understandable (96%). Consumers who found the infograph useful were significantly more likely to have vaccination plans (OR= 4.06, CI: 1.37 – 11.9, p=0.016).*

Conclusion: *A shingles vaccine infograph focused on key barriers to vaccination was well-received and useful in promoting consumers' vaccination plans.*

Keywords: shingles, infograph, health literacy, educational intervention, vaccination plans

Background

Herpes zoster (commonly called shingles) is a vaccine preventable disease caused by the re-activation of latent varicella zoster virus to which almost all adults are susceptible.[1,2] According to the Centers for Disease Control and Prevention (CDC), approximately 1 in 3 people in the Unites States will develop shingles in their lifetime.[3] Shingles is characterized by painful and debilitating vesicular rash, usually on one side of the body, that typically heals in 2-4 weeks. The most common complication of shingles is post-herpetic neuralgia (PHN), a condition that especially affects older adults and can last months to years after the rash has healed.[2,4] The risk of PHN increases with advanced age, and 50% of the patients 60 years and older develop this complication.[4] Shingles poses a significant economic burden to the healthcare system and is projected to have $2.4 billion in direct medical costs and productivity losses annually.[5]

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Shingles vaccination, recommended for adults 50 years and older, offers a cost-effective solution to reduce the economic burden and morbidity associated with shingles.[6] Community pharmacies with their access and convenience are uniquely positioned to increase immunization rates and may be particularly effective in immunizing high risk older adults who are more likely to use pharmacy services for prescription medications.[7] In fact, shingles vaccines are among the most common vaccines offered in community pharmacy-based immunization services.[8] While shingles vaccination rates have increased from 6.7% in 2008 to 34.5% in 2018 in adults over 60 years,[9] still only one third of eligible adults have received the vaccine. In Illinois, the vaccination rate was 28.1% for adults over 60 years based on the 2014 Behavioral Risk factor surveillance system (BRFSS) data.[10]

Several patient and organizational level barriers to shingles vaccination have been identified.[8] Patient factors include cost of the herpes zoster vaccine due to poor or no insurance coverage, and lack of knowledge or awareness about shingles vaccine. Organization factors include billing challenges, time, and insufficient physical space for vaccine delivery.[4,8, 10-12] Among these, high cost and lack of knowledge are key barriers to immunization.[13] Several pharmacy-based interventions have focused on raising awareness about the shingles vaccine which have positively impacted vaccination rates.[8, 14-17] A meta-analysis of pharmacist immunization programs on

DOI: https://doi.org/10.24926/iip.v13i3.4918

immunization rates concluded that pharmacist immunization programs with "active advocacy" are most useful in increasing vaccination rates.[8,18] Active advocacy refers to targeted messaging such as personal recommendations at the point of counseling, personalized text, messages, phone calls, flyers in prescription bags etc.[8] However, these "active" efforts from the pharmacy may not be sustainable for a longer time period as they require dedicated budget and active involvement of the pharmacist. Further, most of these methods are focused on raising general awareness about getting vaccinated rather than addressing one or more of the specific barriers associated with lower shingles vaccination rates.

Lack of knowledge is an easily modifiable barrier that may influence eligible consumers' plans to seek shingles vaccinations.[19] Being unaware about eligibility for shingles vaccine, failing to recognize one's perceived susceptibility to shingles, or the positive impact that vaccination has irrespective of its cost are all contributors to consumers' poor knowledge about shingles vaccinations. Incorporating in-depth routine education about the above issues by a pharmacist at a busy community pharmacy is not practical, as it will require dedicated pharmacist/technician time and monetary resources. There is a need for intervention which can influence mass consumers' plans to get vaccinated for shingles, address key barriers, is potentially sustainable in the long term, non-obtrusive to the pharmacy workflow, budget-friendly, and tailored to individuals at all levels of health literacy. Infographs tailored to patients' concerns offer a potential solution to address the challenge of poor vaccination knowledge.

Infographs combine words and images to convey information in a simple, health-literacy friendly manner, and are a useful method to enhance knowledge about shingles that is conducive for use in busy community pharmacy settings. Of late, studies have linked infographs to useful outcomes such as increasing patient understanding,[20] encouraging health promoting behaviors,[21] improving caregiver comprehension,[22] and increasing knowledge and self-efficacy in HIV patients.[23] In the area of vaccinations, infographs have been studied only recently, with literature reports of use of infographs in human papillomavirus (HPV) vaccination,[24] and for the covid-19 pandemic.[25-27] To date, there has not been an evaluation of an infograph intervention for shingles carried out in a community pharmacy environment. Given that there is evidence that infographs can impact nonclinical outcomes positively, it is essential to determine whether they can be used in busy community pharmacy environments as a low-cost solution to encourage shingles vaccinations. To respond to the need for a non-obtrusive intervention which can address key barriers to shingles vaccination for all levels of health literacy, our study developed and assessed the impact of a shingles education infograph. Using health literacy principles of planning, content, literacy demands, organization, graphics, layout and typography,[28] to guide the design of the shingles infograph, we aimed to ensure that information is presented to align with skills and abilities of the general population.

Objectives

The objectives of this study were to: 1) design a health literacy tailored shingles infograph addressing barriers of lack of knowledge and cost, 2) determine consumer perceptions of the usefulness of the infograph, and 3) determine factors associated with consumers plans to obtain the shingles vaccination.

Methods

Infograph design:

A search of health-related infographs available online was first made to identify relevant aspects such as use of pictures, design and format, and type of content needed to create the initial draft of the infograph. Multiple infographs on topics ranging from autism, vaccinations, influenza, pneumonia, etc. that were easily available on the internet at the time of study design were reviewed; these created the blueprint of the infograph for our study.[29-33] The infograph was designed to adhere to health literacy principles of focusing content to items that consumers need to know, carefully organizing information, ensuring that words used meet the literacy demands of the population, using relevant graphics, and designing infograph to be simple, and free from clutter.[28] The initial draft was shared with two community pharmacists (one from independent and another from chain pharmacy practice) for feedback and revised. To ensure readability, the revised draft was then administered to two, six-member community-based focus groups comprised of convenience samples of adults over 60 years of age; one group comprised of church-going adults and the other group consisted of university employees/retirees. Each of the two focus group sessions lasted for one hour and was moderated by a faculty member (MW). Specific questions enquiring about the display of pictures, content, and overall impression about the infograph were asked to understand the feasibility of the infograph for the intended audience (adults 50 years of age and over). Common suggestions provided by the focus group participants were identified and used to guide the design the final version of the infograph shown in Appendix 1. The Flesch Kincaid reading level of the final infograph was determined. The reading level was 1.9 with 88% ease of reading.

Survey design:

A 22- item paper-based survey with five sections assessing awareness of vaccine availability, infograph usefulness, health literacy, demographics, and plans for obtaining the shingles vaccine on the survey date was designed. Given that it is a "passive" intervention not involving the pharmacist or other pharmacy personnel, and our sample included eligible consumers visiting the pharmacy not particularly for shingles, we felt that the most appropriate outcome measure was "plans to vaccinate" rather than assessing vaccination rates. Vaccine awareness was assessed using a single item yes/no question followed by an additional question asking from whom they

DOI: https://doi.org/10.24926/iip.v13i3.4918

heard about shingles vaccine. Health literacy was measured using the three brief screening questions that have established validity in identifying patients with low health literacy. [34-36] Usefulness was measured using a 9-item survey about ease of reading, understandability, and usefulness of the infograph. Usefulness items were assessed using a four-point Likert type scale ranging from strongly agree to strongly disagree. The final section of the questionnaire consisted of demographics and a single item question about plans to get vaccinated with four options ranging from 1= I don't see the shingles shot is going to help me, 2= I am not interested in the shingles shot right now, but I am thinking about it in the future, 3= I plan to get the shingles shot in the next 6 months, 4=I will get my shingles shot today. The survey was pilot tested with two community pharmacists and items were modified to enhance clarity.

Survey Administration

The study population consisted of consumers visiting three independent pharmacies and one chain pharmacy over a period of six months. Inclusion criteria for the study were: a) age >50 years, b) no contraindications for shingles vaccination, c) have not previously received the Shingrix ® (recombinant zoster vaccine) vaccine. A trained student data collector was present to recruit study participants, answer questions regarding both the infograph and the survey as needed, and to collect completed surveys. Recruitment was performed by asking consumers visiting study pharmacies during times when the student data collector was present. The students asked potential study candidates about inclusion criteria and their interest in participating in the study. The study sample was comprised of those participants who were interested and met study inclusion criteria. Interested individuals who met the study criteria and verbally consented to participate in the study first viewed the infograph followed by self-administration of the survey. Human subjects' approval was obtained from the Southern Illinois University Edwardsville Institutional Review Board before data collection commenced.

Data Analysis

Data were analyzed using SPSS version 25[37] and Stata 16.[38] Health literacy was scored by summing the scores of the three items that formed the health literacy scale. Scores below or equal to 10 were categorized as adequate health literacy while scores above 10 were considered as low health literacy.[35] Reliability of the usefulness scale was determined using Cronbach's alpha. Chi-square and Fisher's exact tests were used to examine differences in demographics with consumer's plans to get vaccinated for shingles. The nine infograph usefulness items were combined to form a composite measure with two categories—"infographic was useful" and "infographic was not useful". To create the composite measure, strongly agree and agree options were combined after reverse coding for one item to form the "useful" category, while disagree and strongly disagree were combined to form "not useful" category. Demographic categories such as race, education, age, and type of insurance were collapsed to form fewer categories for analysis purposes. Consumers' plans for getting the shingles vaccine was dichotomized into "no plan to get vaccine" and "plan to get vaccine" and was the primary outcome measure for the study. The response options "I don't see that getting the shingles shot will help me" and "I am not interested in the shingles shot right now, but I am thinking about it for the future" were collapsed to form one category (no plan to get vaccine), while "I plan to get the shingles shot in the next 6 months" and "I will get my shingles shot today" were collapsed to form another category called "plan to get vaccine". Multivariable logistic regression with plans to get vaccinated as the dependent variable and demographic factors and usefulness of infograph as independent variables was performed to determine key factors that were associated with consumers' plans to vaccinate.

Results

Of the 422 eligible consumers approached, 112 agreed to participate in the survey with 44.6% from independent pharmacies and 55.4% of respondents from chain pharmacy. Table 1 describes the demographics of the sample. Majority of the respondents were female (56%), white (94%), between 50-70 years of age (77%), had adequate health literacy (96%) (total score $\leq$ 10), some college education (69%), had private or other type of health insurance (81.0%), and were aware of the shingles vaccine (87%). Among those who were aware, the two most frequently cited ways were doctor recommendation (35.6%), and friends and family (28%). Pharmacist recommendation in previous visits was listed as a source by only 13% of the respondents.

Health literacy scores ranged from 3 to 13, with a large percent of respondents scoring either a 3 (35.7%), 4 (17.9%), or 5 (11.6%). When the scores were dichotomized as adequate (scores $\leq$10) and low health literacy (scores>10), majority (96.4%) of respondents scored in the adequate health literacy category. Reliability was also assessed for usefulness of infograph items. The Cronbach's alpha for the usefulness scale was 0.6.

Figure 1 shows respondents' plans for receipt of the shingles vaccine. Overall, majority of the respondents (91%) were not interested in getting the vaccine on the survey date. Of those who were not interested in being vaccinated on the survey date, approximately 46% of respondents were not interested now, but were thinking about it in the future, with 29% planning to get it in the next six months.

Table 2 describes the perceptions of respondents to infograph items. Majority (>90%) of the respondents strongly agreed or agreed about usefulness of the infograph in helping recognize the need for shingles vaccination, and that it highlighted the main points, was easy to read, follow, and understand. However, approximately 40% were not convinced about getting the shingles vaccine after viewing the infograph. Infograph usefulness items did not differ by gender, race, education, age,

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insurance, health literacy, or awareness of shingles. One usefulness item (the infograph answered questions about getting the shingles vaccine) differed by pharmacy type, with stronger agreement by consumers visiting independent pharmacy (mean=1.45 (Standard Deviation (SD) = 0.58) rather than chain pharmacy (mean=1.94 (SD=0.74). (results not displayed in table).

Table 3 describes whether each of the demographic factors and the composite measure of infograph usefulness differed based on consumers' plans to get the shingles vaccine. Consumer perceptions of usefulness of the infograph was significantly associated with plans to get shingles vaccine (p=0.016). About 51% of those who found the infograph useful had plans to vaccinate compared to 28% of those who did not find the infograph useful.

Table 4 describes key factors that are associated with consumer plans to get vaccinated for shingles. Those who found the infograph useful were more likely to have plans to vaccinate (OR= 4.06, CI: 1.37 – 11.9). Consumers who were in the 60-69 years age group were more likely to have plans to vaccinate (OR = 5.05, CI: 1.46 – 17.56). Additionally, those with Associate's degree were significantly less likely to have plans to vaccinate (OR=0.05, CI=0.001-0.56) compared to those with a college degree (Bachelor's degree and above).

Discussion

Consumers visiting chain and independent pharmacies found the newly designed health literacy tailored infograph focused on issues of cost and knowledge about shingles to be easy to read and understand. They also perceived that the infograph helped them recognize the need for shingles vaccination. Consumers perceived the infograph to be useful and it was significantly associated with plans to vaccinate. Study participants who found the infograph useful had four times the odds of "planning to get the shingles vaccination." The infograph intervention demonstrated that it was effective in influencing consumers' understanding and perception of shingles by influencing their plans to seek vaccination. Plans to vaccinate is not as concrete an outcome as vaccination rates; however, given that the methodology involved approaching consumers entering a pharmacy for a variety of needs ranging from shopping for non- pharmacy products to picking up their prescription medications, and assuming that shingles vaccinations was not their immediate need, the use of outcome such as plans to get vaccinated serves as a good proxy measure for impacting future vaccination rates. However, as only eight percent of individuals indicated that they would get the vaccine on the data collection date, we determined that the infograph alone was not enough to change behavior and convince consumers to get vaccinated. Since our intervention was low impact and did not involve the pharmacist, it was not surprising that the level of influence it had on consumers was also minimal. For behavior change to occur from plans to vaccinate to actual vaccinations, the role of active involvement of the pharmacist is essential and is consistent with previous literature.[8, 17] It is also in line with the response given to one of the items "I am not convinced about getting the shingles vaccine even after viewing the infograph", in the survey assessing usefulness of the infograph. Nevertheless, despite using a low impact intervention, we were able to get 8% of the sample that answered the survey to indicate that they planned to get vaccinated on the survey date. Additionally, successful implementation of the intervention in study pharmacies with minimal to no impact on pharmacist workflow coupled with consumers' positive perception of the infograph based on the usefulness survey suggests potential for greater success with additional pharmacy personnel participation when feasible.

Encouraging consumers to get vaccinated for shingles is challenging as evidenced by data indicating only about one third of adults being currently vaccinated for shingles.[9] As seen in our study, there was a large difference between the number of eligible study participants (n=112) and those who planned to get shingles vaccination (approx. 8%, n=9) on the survey date. A low percent for those planning to get the vaccine implies an even lesser potential for actually getting vaccinated (i.e., vaccination rate). Our results although not directly comparable due to different outcome measures, is similar to other studies in the literature that have assessed vaccination rates. Wang et al. conducted a prospective pharmacist intervention study with experimental group receiving active pharmacist involvement to promote shingles vaccination rates. Despite active pharmacist involvement, their vaccination rate increased to a small extent from 0.37% to 1.2% of eligible individuals.[4] More recently, Hohmann et. al, conducted a multicomponent intervention, the "We Immunize Program" in 62 Alabama and California pharmacies. While they were able to show significant increases in pneumococcal vaccinations in the intervention compared to the control group, they were unable to show similar significant increase in shingles vaccinations.[39] For vaccines such as shingles vaccine that are not seasonal, increasing vaccination rates is therefore considerably harder. Since our infograph was perceived as useful for influencing future vaccination plans, a subsequent study involving infograph and active involvement of the pharmacist or pharmacy technician may have a positive impact on the more tangible outcome measure of vaccination rates. Our study also found that only 13% of respondents indicated the pharmacist as the source of awareness of shingles vaccine. These results suggest that awareness training for pharmacists about their valuable role in influencing shingles vaccination rates would be beneficial. Training coupled with targeted marketing about the pharmacists' role may promote greater awareness among consumers.

Comparisons of factors that are associated with plans to vaccinate in our study were similar to those reported in the literature. Lee et. al. found that people over 65 years, those with higher education (>12 years), and whites had greater odds of receiving the shingles vaccine.[40] Similarly, Teeter et. al, found that age, race, having Medicare prescription benefit, last year's

DOI: https://doi.org/10.24926/iip.v13i3.4918

influenza vaccination status, and awareness of shingles vaccine were associated with vaccination status.[11] With respect to the outcome measure "plans to vaccinate", our study found similar results. We also found that eligible individuals who were in the 60-69 age group were five times more likely to have plans to vaccinate than those who were younger (50-59 years), similar to Lee et. al. However, those who were 70 years and over were less likely to have plans to vaccinate compared to the younger group (50-59 years). It appears that concerted efforts need to be targeted to the 70 years and older age group to encourage them to seek shingles vaccinations. Those with an associate's degree were significantly less likely to have plans to vaccinate than those who had a college degree, similar to the results in Lee et. al.'s study.[40] Our study also did not find a significant relationship between health literacy and plans to vaccinate. One reason could be that the majority of our sample had adequate health literacy resulting in very little variability in the data. While there has been no study examining health literacy in shingles vaccination in particular, a systematic review that examined the role if heath literacy on vaccine hesitancy concluded that the relationship between health literacy and vaccine hesitancy was unclear.[41]

Despite study strengths such as use of methodology design that is reflective of real-world pharmacy practice with its limitations on pharmacist and technician time, and use of an infograph that incorporated the patients' perspective, our study had several limitations. Data collection for our study involved a portion of the data collected when zoster vaccine live (ZVL) was the only vaccine on the market and before recombinant zoster vaccine (RZV) was introduced. After RZV was introduced, we had to pause data collection due to unavailability of the RZV vaccine in pharmacies for a brief period and study pharmacies being disinterested in using the infograph for promoting vaccinations during a period of vaccine unavailability. When we resumed data collection, the infograph now was required to refer to the modified age criteria as approved by the Food and Drug Administration (FDA) for the currently available RZV vaccine. Hence, the eligibility criteria section of the infograph was modified to meet the new Advisory Committee on Immunization Practices (ACIP) guidelines for age eligibility for RZV vaccine. This modification involved revising the section of the infograph listing eligibility to age of 50 years from the original recommendation of age of 60 years and above. The unexpected guideline change during the middle of data collection may have impacted our results. In fact, we found that age was a significant factor associated with plans to vaccinate. While external factors such as guideline changes were beyond our control, we aimed to maintain integrity and fidelity of the data collection process as much as possible. We also had to abandon the in-person data collection due to COVID-19 pandemic restrictions and hence had sample size limitations that may have impacted the results. Additionally, we were only able to collect data based on the availability of student data collectors, which may have also contributed to lower sample size, as student timings for data collection may not have matched peak times when the pharmacy was busy. Data collection associated with student availability also limited the study to use a convenience sample involving eligible study participants who visited the pharmacy during times when student data collector was present. Another limitation was the inaccessibility of information about vaccination status from study pharmacies. We relied on survey responses to determine if they planned to get vaccinated on the study date. Ability to corroborate their response with actual vaccination records data from study pharmacies would have strengthened our results further. Other limitations include pilot testing the survey with pharmacists rather than consumers as it was logistically easier, the high health literacy status of the participants which may have contributed to them being already aware of importance of shingles vaccinations and not being influenced by the infograph about their intention to vaccinate. Finally, the study design chosen for the study may have impacted the results. The study design did not involve a question about intention to vaccinate before viewing the infograph (pre-intervention). While such a design would have helped make a stronger case for the effect of the infograph intervention, we were concerned that a response of 'no intention" if received in the pre-intervention stage might lead to lower or no interest in participating in a study which has as its goal to promote consumer intention to obtain shingles vaccinations. We therefore chose to use a design that had more chances of success for study participation.

Conclusion

We successfully designed a shingles vaccine infograph focused on essential issues of cost and knowledge about shingles and incorporated it in the real world setting with its limitations on budget, and impact on workflow. The infograph alone was minimally effective in gaining actual vaccinations, but was useful in promoting consumers' plans to vaccinate. It was well received by consumers regarding its usefulness and was effective in influencing consumers' understanding and perception about shingles. Active advocacy by the pharmacist coupled with use of infograph offers a potent solution to promote vaccination rates. Future efforts should be directed at enhancing the pharmacists' active role in promoting shingles vaccinations in community practice coupled with use of simple, visually appealing tools such as the infograph to promote shingles vaccinations.

Acknowledgements: The authors thank student data collectors for assisting with data collection and study pharmacies for permitting data to be collected at their study sites. Study data are available and will be shared, if needed.

Funding Acknowledgement: The authors would like to thank the SIUE School of Pharmacy and SIUE Undergraduate Research and Creative Activities (URCA) grant for financial support for data collection.

Conflict of Interest: We declare no conflicts of interest or financial interests that the authors or members of their immediate families have in any product or service discussed in the manuscript, including grants (pending or received), employment gifts, stock holdings or options, honoraria, consultancies, expert testimony, patents, and royalties.

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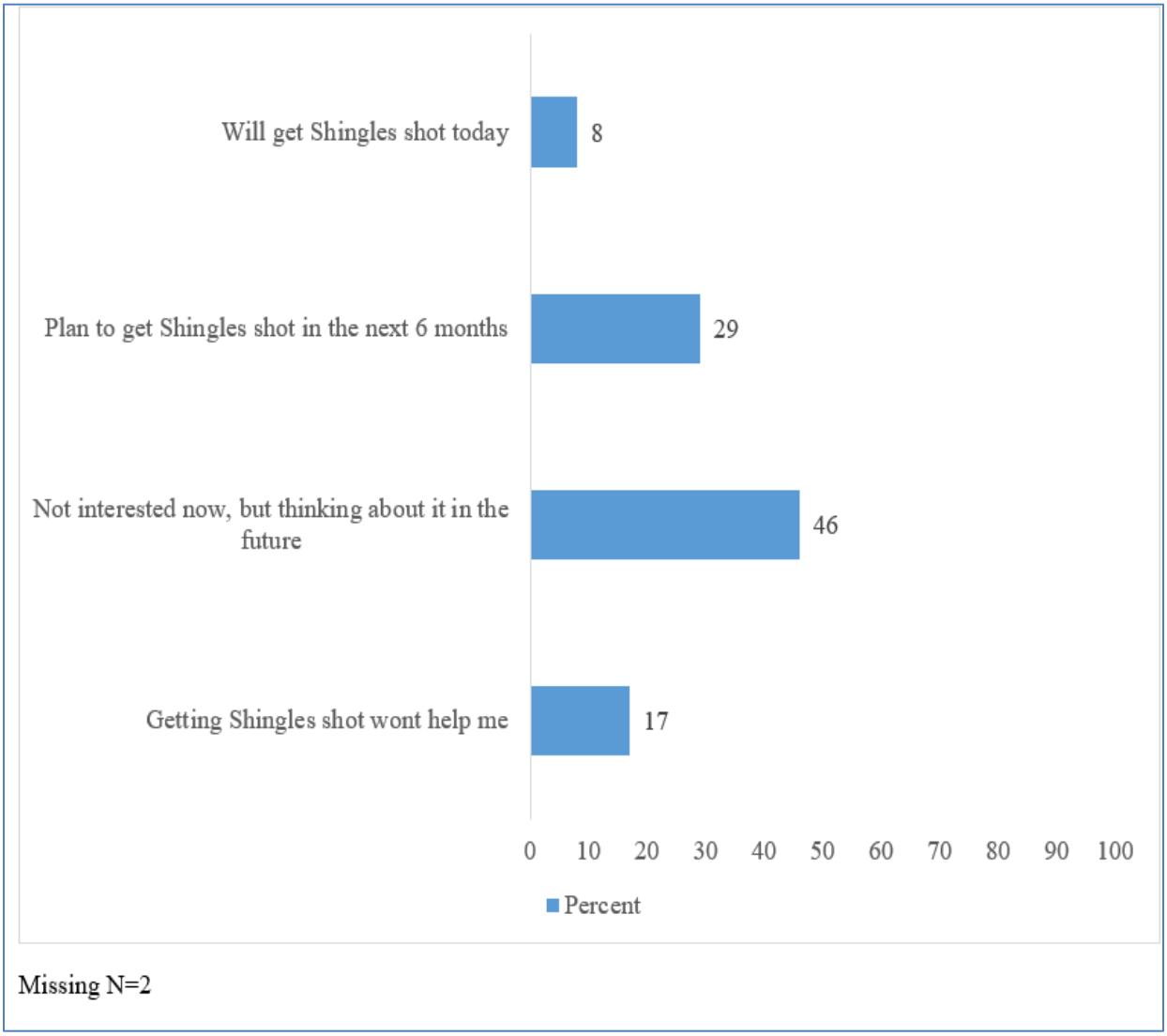
Table 1: Sample demographics (N=112)

Demographic Characteristic	N (%)
Gender	
Male	48 (43.6)
Female	64 (56.4)
Age	
50-59 years	37 (33.6)
60-70 years	48 (43.6)
>70 years	25 (22.8)
Race	
White	99 (94.3)
Non-white	6 (5.7)
Health Literacy (HL)	
Low HL (HL scores>10)	4 (3.6)
Adequate HL (HL scores≤10)	108 (96.4)
Education	
Less than high school to some high school	3 (2.7)
High school graduate/GED	20 (17.9)
Associate degree	12 (10.7)
Some college	20 (17.9)
College or more	57 (50.9)
Insurance	
Medicare Part D	21 (18.8)
Private insurance	54 (48.2)
Other (VA, Tricare, Medicaid, or combination)	37 (33)
Annual household income	
Less than $24,999	15 (15.2)
$25,000-$49,999	20 (20.2)
$50,000-$74,999	20 (20.2)
$75,000 or more	44 (44.4)
Whether they got the influenza shot	
Yes	76 (67.9)
No	32 (28.6)
Don't know/unsure	4 (3.6)
Aware of shingles vaccine	
Yes	97 (86.6)
No	12 (10.7)
Not sure	3 (2.7)

DOI: https://doi.org/10.24926/iip.v13i3.4918

Figure 1: Future plans about shingles vaccination (percent in each category) (N=110)



DOI: https://doi.org/10.24926/iip.v13i3.4918

Table 2: Infograph perceptions

Survey Items	Strongly agreed or agreed[a] N (%)	Mean (SD)
1. The infograph helped recognize the need for Shingles vaccinations	106 (94.6)	1.55 (0.6)
2. The infograph highlighted the main points that I was concerned about regarding shingles vaccination	104 (93.7)	1.58 (0.6)
3. I like the use of infograph better than other ways of sharing information about shingles vaccination	92 (82.1)	1.81 (0.7)
4. The infograph answered questions I had about getting the Shingles vaccine.	98 (88.3)	1.72 (0.7)
5. I am not convinced about getting the shingles vaccine even after viewing the infograph.	45 (40.2)	2.77 (1.0)
6. The infograph was easy to read.	107 (95.5)	1.39 (0.6)
7. The infograph was easy to follow.	107 (96.4)	1.39 (0.59)
8. Pictures used in the infograph were easier to understand.	101 (91.0)	1.56 (0.71)
9. The infograph is missing information that is important to me.	21 (18.9)	3.11 (0.97)

[a] Response options: 1= Strongly agree, 2= Agree, 3= Disagree, 4= Strongly Disagree

[b] Some items have missing responses and therefore had a different total N (e.g., N=111). Hence, even with the same N for strongly agree/Agree, they might show different percentages.

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Table 3: Shingles vaccination plans by demographics

	No plans to get vaccine n=69 n (Row percentage)	Plans to get vaccine n=41 n (Row percentage)	p-value[a]
Age			
50-59	28 (75.7)	9 (24.3)	0.062
60-69	24 (51.1)	23 (48.9)	
70+	16 (66.7)	8 (33.3)	
Gender			
Male	27 (57.5)	20 (42.6)	0.297
Female	41 (67.2)	20 (32.8)	
Race			
White	61 (62.9)	36 (37.1)	1.000
Non-White	4 (66.7)	2 (33.3)	
Health Literacy Category			
Low	3 (75.0)	1 (25.0)	1.000
Adequate	66 (62.3)	40 (37.7)	
Education			
GED or less	15 (65.2)	8 (40.0)	0.687
Assoc Degree	9 (75.0)	3 (25.0)	
Some College	12 (60.0)	8 (40.0)	
College or graduate degree	33 (60.0)	22 (40.0)	
Insurance			
Part D	14 (66.7)	7 (33.3)	0.808
Private	31 (59.6)	21 (40.4)	
Other	24 (64.9)	13 (35.1)	
Annual Income			
Less than 24K	11 (73.3)	4 (26.7)	0.154
25-49,999	9 (45.0)	11 (55.0)	
50-74,999	10 (50.0)	10 (50.0)	
75K or more	29 (69.1)	13 (30.9)	
Flu shot status			
Yes	45 (60.8)	29 (39.2)	0.612
No	22 (68.7)	10 (31.3)	
Unsure	2 (55.0)	2 (50.0)	
Pharmacy type			
Independent	27 (54.0)	23 (46.0)	0.084
Chain	42 (70.0)	18 (30.0)	
Infographic usefulness[b]			
Combined measure: Useful	23 (48.9)	24 (51.1)	0.016
Combined measure: Not Useful	43 (71.7)	17 (28.3)	

[a] Chi-square or Fisher Exact test
[b] Infographic usefulness was a combined measure of 9 individual items that assessed the value of the infographic
[c] N= 110, as two people did not answer the plans to get vaccinated question

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Table 4: Factors associated with plans to get shingles vaccination: Multivariable logistic regression

Plans to get shingles vaccination	Odds Ratio	[95% Conf. Interval]		p-value
Found the infographic useful	4.061626	1.37	11.98	0.011
Age, years				
60-69	5.06369	1.45	17.56	0.011
70+	0.8629953	0.18	4.09	0.853
50-59	Reference	Reference	Reference	
Education				
General Education Development or less	.6244893	.12	3.09	0.564
Associate Degree	.0588408	.001	.56	0.014
Some College	.5976697	.14	2.54	0.486
College degree or higher	Reference	Reference	Reference	
Annual household income				
Less than $24,999	.3958561	.06	2.52	0.327
$25,000 – $49,999	7.720433	1.49	39.93	0.015
$50,000 – $74,999	1.6401	.41	6.54	0.483
$75,000 or more	Reference	Reference	Reference	
Type of pharmacy				
Chain	.3337284	.11	.99	0.049
Independent	Reference	Reference	Reference	

DOI: https://doi.org/10.24926/iip.v13i3.4918