

IMMUNIZATION PERCEPTION AND EDUCATION

by
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ABSTRACT

KATIE DAY: Immunization Perception and Education
(Under the direction of Dr. Michael Warren)

With vaccination rates in the United States falling, there is now a growing need for immunization education. This study aimed to survey a large group of students to determine the most beneficial method of educating the public and to evaluate the locations that individuals are more likely to receive vaccinations. The survey highlights the increasing demand for physicians and pharmacists to improve immunization education to prevent individuals from dying each year due to vaccine preventable diseases.

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LIST OF ABBREVIATIONS

AAFP	American Academy of Family Physicians
AAP	American Academy of Pediatrics
ACIP	Advisory Committee on Immunization Practices
CDC	Centers for Disease Control and Prevention
DTaP	Diphtheria, tetanus, acellular pertussis vaccine
FDA	Food and Drug Administration
Hib	<i>Haemophilus influenzae</i> Type B
HPV	Human papillomavirus
MCV4	Meningococcal conjugate vaccine
MMR	Measles, mumps, rubella vaccine
PCV	Pneumococcal conjugate vaccine
Tdap	Tetanus, diphtheria, acellular pertussis vaccine (booster)
VAR	Varicella vaccine

Introduction

Vaccinations are a simple solution to provide the body immunity for individuals without the individuals ever having to contract the disease and suffer the symptoms. The healthy human body naturally recognizes foreign substances, like pathogens, and immediately begins to rid the body of the foreign substance and build a defense mechanism against the pathogen to protect against future encounters. The body uses antibodies as one of its main defense mechanisms. Antibodies are produced and trained to recognize the pathogens presented to the body so the body can quickly recognize and kill the pathogen before symptoms are shown after subsequent exposure. The body's newly synthesized antibodies are able to recognize pathogens and protect the body for years after the initial exposure; however, while the body is building up a defense against the foreign substance, an individual is affected by the disease and may show adverse symptoms before the antibodies are completely able to clear the contracted illness from the body.¹

In 1796, Edward Jenner provided the world with an effective way to prevent the contraction of certain diseases via vaccinations. Jenner used the pus from a cowpox lesion and injected it into 8-year-old James Phipps. Cowpox was a disease commonly contracted by milkmaids, and while it was considerably less dangerous than smallpox, cowpox is very similar to the smallpox virus. The body is able to recognize parts of a virus and produce antibodies, so it is not necessary to expose the body to the entire, virulent strain of a pathogen to produce immunity. James Phipps proved immune to the smallpox virus after he was exposed to the virus several times by Jenner to determine that the vaccination had indeed proved efficacious.²

Today, the list of available vaccinations continues to grow, and many vaccine-preventable diseases are rarely diagnosed in the United States every year. There are currently 79 FDA approved vaccinations available for distribution in the United States, and these 79 vaccinations provide immunity to prevent the contraction and spread of the following diseases: adenovirus, anthrax, chickenpox, diphtheria, encephalitis, *Haemophilus influenzae*, hepatitis A, hepatitis B, human papillomavirus, influenza, measles, meningococcal disease, mumps, pertussis, plague, pneumococcal disease, polio, rabies, rotavirus, rubella, smallpox, shingles, tetanus, tuberculosis, typhoid fever, and yellow fever. In collaboration, the American Academy of Family Physicians(AAFP), American Academy of Pediatrics (AAP), and Advisory Committee on Immunization Practices (ACIP) update the list of recommended vaccinations each year to provide the public with a comprehensive list of available and recommended vaccines for children and adults of all ages. Mississippi has consistently shown high vaccination rates in recent years with $\geq 99.7\%$ coverage in most childhood vaccines including MMR, DTaP, and both doses of the Varicella vaccination; however, not all states show such high vaccination rates.³ Vaccinations provide the public with an efficient way to lower health care costs, reduce hospital admissions, and prevent death caused by common diseases that are easily prevented by receiving the recommended immunizations at age-appropriate times.^{4,5}

With the growing need for vaccines, there are many different vaccines available today. Vaccines can be live attenuated, inactivated, or conjugate. Live attenuated vaccines contain live viruses or bacteria that have been weakened and are able to provoke an immune response in an individual without the individual showing symptoms of

disease. Since live attenuated vaccines are the most similar to a natural infection, they usually provide an individual with the longest and most robust immunity; however, not everyone is eligible to receive live attenuated vaccinations because individuals with weakened immune systems may not be able to build the appropriate immune response without contracting the disease. It is recommended that individuals with weakened immune systems seek a different vaccination option or consult a health care professional. An inactivated vaccine contains the killed strain of a virus or bacteria, and it not possible to contract the disease after receiving an inactivated vaccine. Unlike live attenuated vaccines, inactivated vaccines do not resemble a natural infection, so the immunity provided by inactivated vaccines, while efficacious, will not last as long or be as robust. Some vaccines do not required the specific strain of virus or bacteria to evoke an immune response in an individual, but instead, the body can recognize a specific protein or carbohydrate that is present on the outside of the virus or bacteria. Subunit and conjugate vaccines can evoke an immune response by presenting the body with only the protein or carbohydrate found on the outside of a virus or bacteria, and like inactivated vaccines, it is not possible to contract the disease after receiving a subunit or conjugate vaccine. The many different types of vaccines make it possible for a range of individuals with unique medical histories to be eligible to receive vaccinations.⁶

Chapter I: Why Vaccinate?

Vaccinations have provided the population with a preventative method to effectively eradicate some diseases. Due to high vaccination rates, smallpox was declared eradicated in 1980.⁴ Advancements in medicine and the availability of vaccinations today provides the opportunity to eradicate many more diseases. Today in the United States, polio and diphtheria are becoming extremely rare, and it is possible that they too may be declared eradicated; however, it is important to continue to push for citizens to receive vaccinations each year to ensure new cases of vaccine-preventable diseases are rare to nonexistent. Until a disease is completely eradicated, it is important to continue vaccinating because there is still a possibility that the disease can spread to the unvaccinated population and cause unnecessary illness and potentially death.⁷ It is also important to promote vaccinating since international travel is so easily accessible today. Also, while some vaccine-preventable diseases are no longer seen in the United States, an international traveller could easily introduce them on a trip to the United States. As long as the vaccine-eligible population is continuing to receive vaccinations, outbreaks of vaccine-preventable diseases can be largely avoided.⁶

In 1974, Japan had nearly eradicated pertussis when almost 80% of the children in Japan had received the vaccination. The citizens of Japan began to vaccinate fewer children after several months without a diagnosis of pertussis. The drop in vaccination rates were primarily due to individuals thinking enough of the population had been vaccinated and spreading news that children could no longer contract pertussis. In 1979, Japan experienced a pertussis epidemic after pertussis vaccination rates dropped

dangerously low. After the epidemic, there was a large influx in the pertussis vaccination rates, and the number of new pertussis diagnoses began to drop. For this reason, it is important that we continue to promote vaccinations until diseases are declared eradicated to prevent possible epidemics in the future.⁸

As vaccination rates start to increase, the population begins to benefit from herd immunity. Not every individual will be a candidate to receive vaccinations, so herd immunity provides an effective way to protect those who cannot become vaccinated such as most of the infant, pregnant, and elderly populations. When a contagious disease spreads within an unvaccinated population, it spreads very rapidly and affects everyone. Some parts of the population, including the young children, pregnant women, and elderly, may be at a higher risk and more greatly affected by the contagious disease since their immune systems may not be as strong as that of a healthy adult. With unsuccessful herd immunity, a very small portion of the population is vaccinated, and a contagious disease will still be more likely to infect the population since a larger portion of the population is still susceptible to disease. The small population that cannot be vaccinated is still left vulnerable to disease along with the other unvaccinated members of the population. With successful herd immunity, a large enough percentage of the population is vaccinated against a contagious disease, and the small population that cannot receive vaccinations is protected from disease. It is more difficult for the contagious disease to spread because it is more likely that it will encounter a vaccinated individual in its spread than an unvaccinated individual. The success of herd immunity is dependent on the disease, but herd immunity is usually provided when 80-95% of the population is vaccinated. The risk of an outbreak is always greater in populations that are not vaccinated, so if more

individuals are vaccinated, eradication of disease is possible even if not every member of the population is able to receive a vaccination. Herd immunity provides indirect protection to the population that did not receive vaccinations.⁹

Even with the great progress that has been made in preventing diseases in the United States each year by vaccinations, it is still possible to completely reverse the progress made if vaccination rates continue to drop.¹⁰ As seen in the pertussis outbreak in Japan in 1979, it is easy to ignore the need for vaccinations when certain diseases are rarely, if ever, diagnosed each year.⁵ For example, while measles is not considered an eradicated illness in the United States, most doctors have never diagnosed an individual with measles. Diphtheria and rubella are just as rare as measles in the United States, but since they have not been declared eradicated, an outbreak is still possible if we stopped vaccinating the population. If the population stops receiving vaccinations for rare diseases, one case of a rare disease could quickly spread to masses of the population, killing thousands. Even if only a small portion of the population received vaccinations, herd immunity would not be effective, and outbreaks would still occur.⁶

The state of Mississippi works to promote increasing vaccination rates by enforcing vaccination requirements for schools in the state. DTaP, Hepatitis B, MMR, PCV, Polio, VAR, and Hib vaccinations are required for nonexempt children in the state before beginning kindergarten. Since it would be unethical to deny education to individuals who are unable to receive vaccinations, the state of Mississippi allows children to claim temporary or permanent exemption from a vaccination or vaccinations. The child is exempt from receiving vaccinations prior to admission if he or she is allergic to any component of the vaccine or cannot receive the vaccine due to a circumstance or

diagnosis that renders the child immunocompromised. The state of Mississippi does not allow exemption based on religious or philosophical reasons, although other states may allow exemption for these reasons.¹¹ While eligible children in the state of Mississippi are required to receive certain vaccinations, it is also suggested that teens and adults also receive certain vaccinations throughout their lifetime. After conducting a survey to evaluate vaccination perception and education, it was found that out of 320 participants, almost one third had not recently received any vaccinations (Table 1, Table 2). It is important that we continue to promote life-long vaccination importance to prevent individuals dying from vaccine-preventable diseases each year.

TABLE 1: Respondent demographics

Characteristic	Number	%
Sex		
Male	97	30.3
Female	223	69.7
Total	320	100
Classification		
Freshman	83	25.9
Sophomore	86	26.9
Junior	75	23.4
Senior	76	23.8
Total	320	100
Field of Study		
Biological Sciences	81	25.7
Business/Marketing	13	4.1
Education	4	1.3
English/Literature	39	12.4
History	10	3.2
International Studies	34	10.8
Other	134	42.5
Total	315	100

TABLE 1 shows the demographics of survey respondents. The survey participants were sampled from members of the Sally McDonnell Barksdale Honors College at The University of Mississippi.

TABLE 2: Respondents' immunization status

Immunization Status	Number	%
Current Vaccines Received		
Influenza (Flu)	150	46.9
Hepatitis A	82	25.6
Hepatitis B	91	28.4
Varicella	31	9.7
Human papillomavirus (HPV)	90	28.1
Tetanus	121	37.8
Meningococcal	82	25.6
Other	29	9.1
None	103	32.2

TABLE 2 shows the current immunization status of the survey respondents. Respondents were able to report receiving several different vaccinations, so these percentages will not add to 100%.

Chapter II: Health Professionals' Role

To meet the growing demands for more vaccinated individuals in the United States, it is imperative that health professionals accept their role of authority and urge the population to receive recommended vaccines. Physicians and pharmacists hold important positions of authority in the field of health care, and patients are more inclined to believe the education provided by physicians and pharmacists. The specialized training that physicians and pharmacists receive places them in a trusted position to patients who seek out their expert medical advice. Physicians and pharmacists are professionals that use a combination of technical healthcare skill and professional skill to successfully relate complex health information to patients in ways that are relevant and important to patients. Physicians and pharmacists can use the trust made possible by their unique skill set to educate patients on vaccinations so patients are able to make the right choice for their health with the help of their physician or pharmacists' expert recommendations.¹²

Pharmacists are provided with the opportunity for a unique interaction with patients in a more relaxed healthcare environment. Pharmacies are usually more readily accessible with regards to proximity to patients' homes, and an appointment is not usually required to receive vaccinations, although this may not always be the case. Pharmacies are also usually open later on weekdays and weekends. Beginning in the 1970s, pharmacists were called to help immunize the public against vaccine-preventable diseases, and pharmacists throughout the United States have since been stepping up to help physicians educate and vaccinate the public. Recent studies have shown that

allowing pharmacists providing vaccinations has greatly improved the vaccination rates in the United States. Today, almost every state in the United States gives specific authority to pharmacists to administer vaccines to the public, but unfortunately, not everyone is aware of the availability of local pharmacists to administer vaccines.

Physicians and pharmacists must not only work together to educate patients on receiving vaccinations, but it is also important that patients are made aware that they may be able to receive a vaccination from their local pharmacy versus making an appointment to see their physician.¹³

To measure the willingness of patients to comfortably receive vaccinations from a local pharmacist, a pharmacist-run immunization clinic was available at a veteran's hospital in San Diego, CA. Patients that received a vaccination from a pharmacist in the clinic were asked to answer a survey regarding their care, and it was found that patients were very comfortable and happy with the care they received by the pharmacist. Many patients (86%) were generally satisfied with receiving a vaccination from a pharmacist at the clinic, and 97.8% of patients felt that the pharmacist administering the vaccination spent the appropriate amount of time caring for them. In addition, 97.8% agreed or strongly agreed that there was good communication with the pharmacist and felt the pharmacist provided effective counseling and education. Most importantly, 98.9% of patients agreed that the pharmacist providing the vaccination was competent and capable of administering the vaccine. Overall, patients were satisfied with the pharmacist-run vaccine clinic, and it is evident that pharmacists now play a crucial role in the health care teams' goal to improve vaccination rates. Pharmacists providing vaccines in combination with local physicians can greatly improve vaccination rates, but pharmacists can also

work to help educate the public on vaccinations to ensure that the vaccine-eligible population is receiving vaccines to provide immunity for the vaccine-ineligible population. It is important that pharmacists strive to make patients aware of the opportunities that may be available for more convenient vaccination and education regarding vaccinations.¹⁴

To determine various health professionals' roles in vaccine administration, survey participants that recently received vaccinations were asked to report the setting in which they received vaccines and in which health care setting(s) the participants would be most comfortable receiving a vaccine. Overall, survey respondents who recently received vaccines were more likely to receive them in a physician's office (Table 3). Regardless of immunization status, most respondents reported that they would be most comfortable receiving a vaccine in a physician's office, which corresponds with the likelihood a respondent received a vaccine in a physician's office, given they had recently received a vaccine (Figure 1).

TABLE 3: Location of vaccine administration of respondents

Location	Number	%
Physician's Office	152	47.5
Pharmacy	63	19.7
Urgent Care Clinic	22	6.9
Hospital	6	1.9
Other	17	5.3

TABLE 3 lists the setting in which survey respondents received a vaccine, given that they had recently received one or more vaccinations.

FIGURE 1: Preferred vaccine administration location

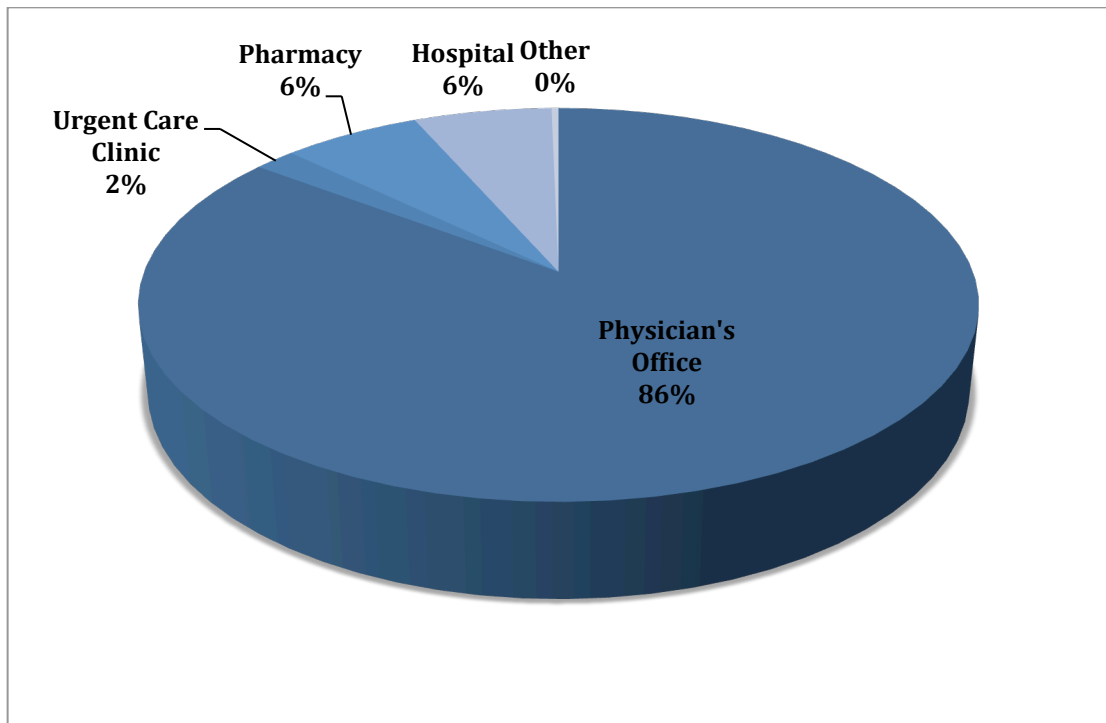


FIGURE 1 illustrates the setting in which survey respondents felt they would be most comfortable receiving a vaccine.

Chapter III: Education

In order to improve vaccination rates, health care professionals must start at the source and begin educating patients on vaccinations. The overwhelming amount of medical information presented to patients can easily become confusing, and it is becoming increasingly common to come across incorrect medical information on social media sites and various websites. Patients are now more and more susceptible to incorrect or misleading medical information, and it is the role of physicians and pharmacists to make sure patients are provided with correct medical information so patients are able to make informed decisions about their healthcare. Many patients require advice when deciding to receive a vaccination, and it is imperative that physicians and pharmacists are an available resource for patients wishing to prevent unnecessary illness.¹⁵

A study published in the Journal of Family Practice was conducted to determine various barriers that patients face when choosing to receive an immunization, and the top three barriers were found to be lack of education, fear of safety, and logistical issues that would limit access to vaccines. Vaccinations are an excellent tool to ensure that children and adults are not able to contract select deadly diseases, but there are many guidelines and recommendations that must be followed to reduce the risk of adverse effects caused by the vaccines. Patients rely on physicians and pharmacists to educate them on many medical decisions such as vaccinations before they make a decision regarding their treatment. While there are many possible adverse effects associated with every vaccine, they can be largely avoided by educating patients so they receive vaccines when it is appropriate and they are comfortable. Education regarding vaccination contents,

purposes, and usefulness can help patients make informed decisions about their care. It is common for health care professionals to assume that the population is well informed about their health, but unfortunately, that is not always the case. The study found that patients who had not been educated about vaccines were more likely to be fearful of vaccinations and were less likely to receive the appropriate vaccinations each year. Physicians and pharmacists must work against the negative attention presented by the media about vaccines and provide patients with correct information and answer any questions or concerns patients may have developed about vaccines. Since it is common for patients to develop fears about vaccines when they are not properly educated on their specific vaccination recommendations, it is important that physicians and pharmacists strive to educate patients to make informed decisions about their health and vaccination status. In an effort to find solutions for the observed barriers, the study found that one of the best indicators of whether or not a patient would receive an influenza vaccine each year was based on their physician's recommendation. Health care professional's advice has such a profound impact on patients' decisions that it is imperative that physicians and pharmacists remember to simply suggest and inform their patients about vaccines.¹⁶

Another study attempted to improve vaccination rates by implementing a vaccine intervention by several physicians and their practices. The physician along with other staff members at each practice site were trained on how to properly educate patients on their vaccination eligibility. After the physicians and staff members completed the training and counseled the patients on receiving appropriate vaccinations, it was discovered that the vaccination rates of patients greatly improved.¹⁷

We have seen that properly educating patients leads to improved vaccination rates, but it is important to first understand how the population is most effectively educated so we can achieve optimal vaccination results. After conducting a survey to determine the best method of education, it was found that most survey participants who had recently receive a vaccine were more likely to prefer to receive education from a physician (Table 4). Out of the respondents that had not recently received a vaccine, it was found that they would also prefer to receive education from a physician (Figure 2). Figure 3 compares the preferred education method of respondents based on their immunization status. A large portion of respondents also preferred to receive information via a brochure or other printed media, and surprisingly, almost no participants preferred to receive education material via social media (Figure 3). In an effort to better understand the answer choice “brochure or other printed media,” survey participants who chose “brochure or other printed media” were then asked to specify which setting they would prefer to receive the printed education material. Not surprisingly, respondents reported that they were more comfortable receiving education via a brochure or other printed media in a physician’s office; however, several respondents reported that they would also prefer to receive printed educational material in a pharmacy (Table 5). The survey results show the overwhelming responsibility placed on physicians to act as advocates for vaccine awareness and educate the population; however, a large number of respondents reported that they were also comfortable receiving vaccines and information regarding vaccines from other health care professionals, and it is important that every member of the health care team continue to promote vaccine education and awareness. Each member of the health care team plays a vital role in patient education, and higher awareness and

education can lead to much higher vaccination rates and lower rates of vaccine-preventable deaths each year.

TABLE 4: Health care professionals providing education for respondents

Health Care Professional	Number	%
Physician	127	39.7
Pharmacist	39	12.2
Nurse Practitioner	23	7.2
Nurse	15	4.7
Other	13	4.1

TABLE 4 lists the various health care professionals that educated the survey respondents on each vaccine, given that they had recently received one or more vaccines.

FIGURE 2: Preferred education resources for recently unvaccinated respondents

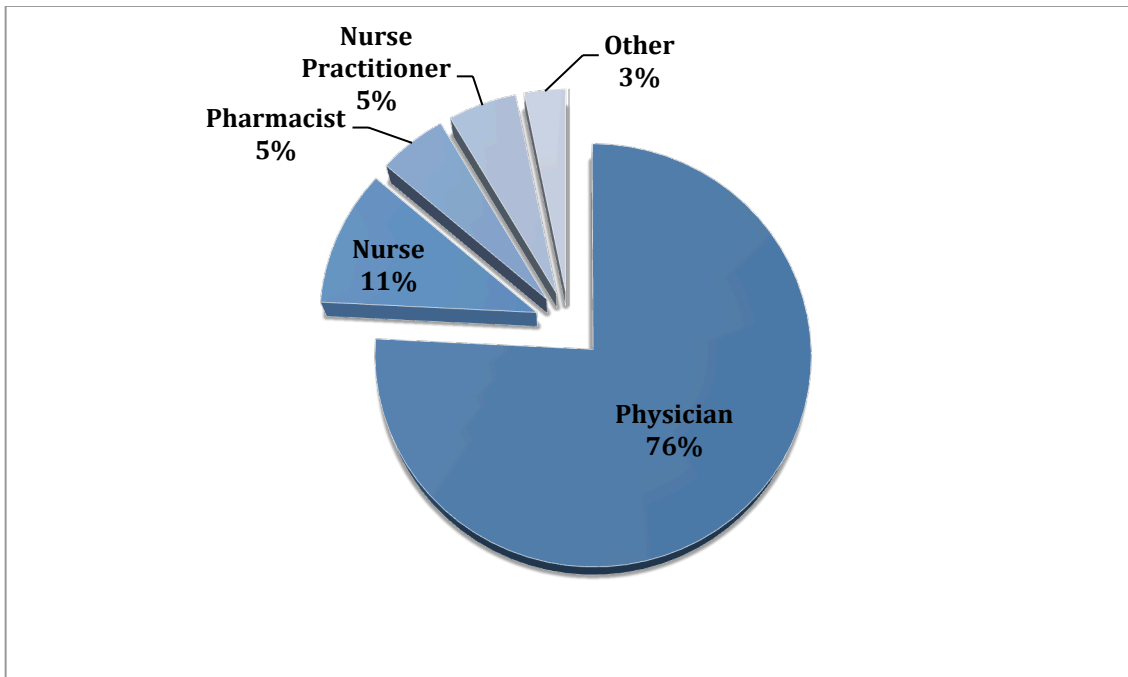


FIGURE 2 illustrates the preferred education resource of those respondents who had not received any vaccinations recently.

FIGURE 3: Preferred education for respondents based on recent immunization status

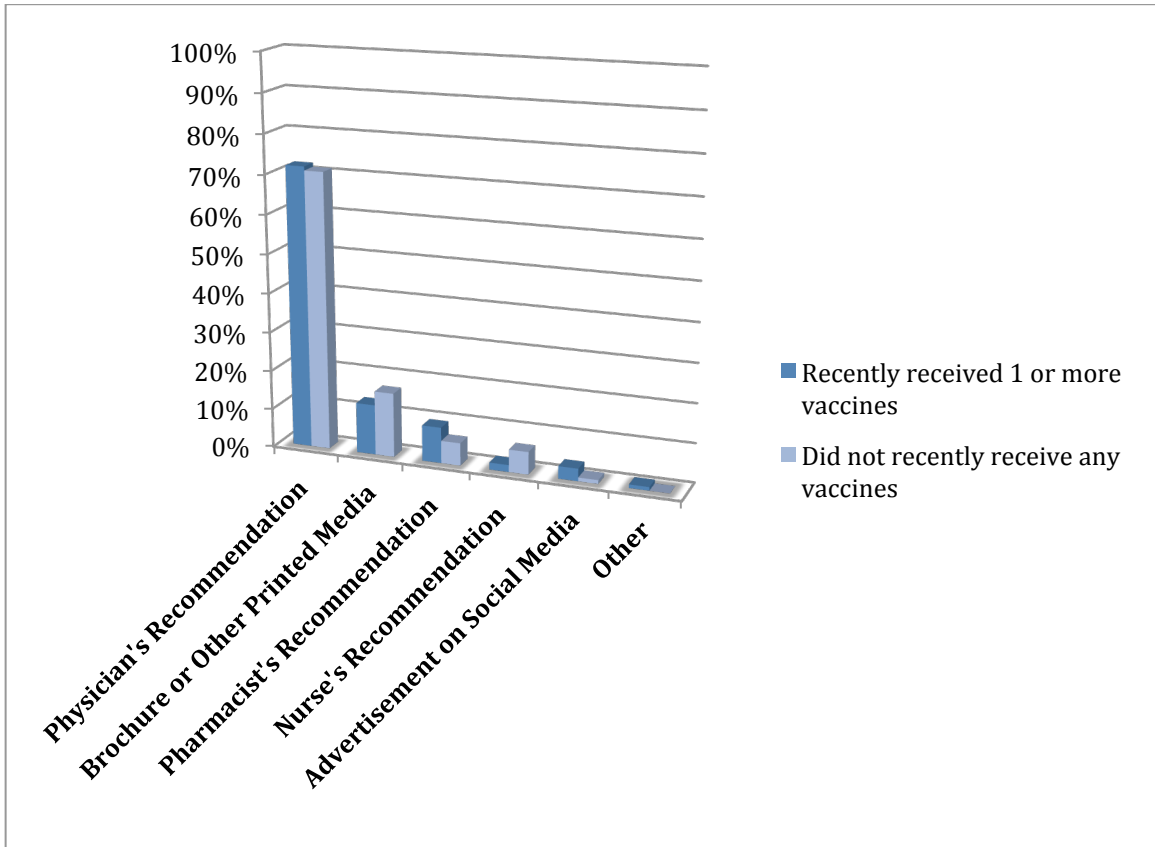


FIGURE 3 illustrates the preferred education method of all survey respondents depending on their recent immunization status.

TABLE 5: Preferred “Brochure or Other Printed Media”

	Number	%
Physician’s recommendation	229	71.6
Brochure or Other Printed Media	45	14.1
Pharmacy	9	20.0
Physician’s Office	24	53.3
Urgent Care Clinic	3	6.7
Hospital	3	6.7
Newspaper or Magazine	5	11.1
Other	1	2.2
Pharmacist’s Recommendation	26	8.1
Nurse’s Recommendation	10	3.1
Advertisement on Social Media	8	2.5
Other	2	0.6

TABLE 5 lists the setting in which survey respondents would be most comfortable receiving information regarding vaccines. It also lists the setting in which respondents would be most comfortable receiving a brochure or other printed media, given they would prefer to be educated via a brochure or other printed media.

Chapter IV: Results

Survey participants were shown to be more comfortable receiving vaccines at a physician's office and education regarding vaccines either at a physician's office or via a brochure or other printed media, regardless of their vaccination status. It is important to understand the setting and education that patients prefer so health care professionals are able to effectively communicate information and improve immunization rates. If a patient doesn't feel comfortable in a certain location, it is not likely that they will receive a vaccine, even if they are properly educated.¹⁵ In an effort to identify certain barriers, survey participants were asked to report the location in which they were most comfortable receiving a vaccine. Respondents were more likely to feel comfortable receiving a vaccine in a physician's office, followed by a pharmacy or hospital setting (Figure 1). The survey results regarding vaccine education correspond to the results regarding vaccine administration location. Even with the overwhelming response that respondents are most comfortable receiving vaccines and vaccine education from physician's and in physician's offices, it is still important that other more accessible health care professionals work to ensure more patients receive their vaccines.

Awareness of pharmacists' role in vaccine administration also played an important role in immunization status for survey participants. Of the 320 survey respondents, 71.6% were aware that pharmacists could administer vaccines in Mississippi, and 28.4% were not aware. When comparing respondents who were aware that pharmacists were able to administer vaccination in the state of Mississippi to those who were not aware, it was found that respondents who were aware that pharmacists are

able to administer vaccines in Mississippi were significantly more likely to receive a flu vaccine (Table 6).

TABLE 6: Pharmacist administration awareness in comparison to recent immunization status of respondents

Vaccine	Aware (n=229)	%	Not Aware (n=91)	%	χ^2	p
Influenza (Flu)	120	52.4	30	33.0	9.877	0.002*
Hepatitis A	57	24.9	25	27.5	0.228	0.671
Hepatitis B	66	28.8	25	27.5	0.058	0.891
Varicella	20	8.7	11	12.1	0.837	0.403
Human papillomavirus (HPV)	61	26.6	29	31.9	0.881	0.408
Tetanus	85	37.1	36	39.6	0.165	0.703
Meningococcal	56	24.5	26	28.6	0.579	0.479

TABLE 6 lists the recent vaccination status of survey respondents based on whether or not they were aware that pharmacists could administer vaccinations in the state of Mississippi.

* indicates a statistically significant value

Discussion and Conclusion

Since there are many barriers to receiving vaccinations and many ways shown to improve vaccination education and rates, it is important that health care professionals recognize their role in each process. While the survey results identified physicians and their practice sites as key players in patient education and improving vaccination rates, it is important that other health care professionals also promote education and awareness. Since pharmacists are often more accessible than physicians, pharmacists could suggest vaccines to patients and also suggest that patients follow up with their physician since survey results show that patients are more receptive to a physician's recommendation. With so many different health care professionals able to administer vaccines, physicians could also distribute the responsibility to other health care professionals in an effort to improve vaccination rates. Since most respondents preferred a health care professional's recommendation, it is crucial to improving vaccination rates that health care professionals set goals to reach out to more patients and educate them about vaccines. Since respondents who were aware that pharmacists were able to administer vaccines in Mississippi were significantly more likely to receive a flu vaccine, pharmacists should begin promoting their abilities in an effort to improve immunization rates due to the fact that pharmacies are often more accessible to patients than other health care settings.

While the study regarding immunization perception and education had many strong characteristics, there were also several limitations. The survey participants were sampled from the Sally McDonnell Barksdale Honors College at The University of Mississippi rather than from a larger, more representative population. The vaccination

status of each respondent was self-reported, so there is not evidence to confirm the actual immunization status of each respondent. Survey participants could have interpreted the phrase “recently received” differently, and this could have affected the self-reported results. Lastly, the survey was conducted in Mississippi, which already displays fairly high vaccination rates in comparison to other states in the United States.

Appendix A

Qualtrics© survey answered by participants

Gender:

- Male (1)
- Female (2)

Classification:

- Freshman (1)
- Sophomore (2)
- Junior (3)
- Senior (4)
- Graduate Student (5)

Field of Study:

- Biological Sciences (1)
- Business/Marketing (4)
- Education (5)
- English/Literature (2)
- History (3)
- International Studies (6)
- Other (7)

Which of the following vaccinations have you recently received?

- Influenza (Flu) (1)
- Hepatitis A (2)
- Hepatitis B (3)
- Varicella (4)
- Human papillomavirus (HPV) (5)
- Tetanus (6)
- Meningococcal (9)
- Other (7)
- I have not recently received any immunizations. (8)

If you HAVE received recent vaccinations, where did you receive information about the administered vaccines?

- Physician (1)
- Nurse Practitioner (2)
- Pharmacist (3)
- Nurse (4)
- Other (5) _____
- I have not recently received any vaccinations. (6)

If you HAVE received recent vaccinations, in what setting were they administered?

- Physician's office (1)
- Urgent care clinic (5)
- Pharmacy (2)
- Hospital (3)
- Other (4) _____
- I have not recently received any vaccinations. (10)

If you HAVE NOT received any recent vaccinations, where would you be most comfortable receiving information regarding vaccinations?

- Physician (1)
- Nurse Practitioner (2)
- Pharmacist (3)
- Nurse (4)
- Other (5) _____
- I have recently received vaccinations. (6)

How would you prefer to be educated on information regarding vaccinations?

- Brochure or other printed media (1)
- Physician's recommendation (2)
- Advertisement on social media (3)
- Pharmacist's recommendation (4)
- Nurses' recommendation (5)
- Other (6) _____

If you answered "brochure or other printed media" to the above question, in which setting would you feel most comfortable receiving the brochure or other printed media?

- Pharmacy (1)
- Physician's office (2)
- Urgent care clinic (3)
- Hospital (4)
- Newspaper or magazine (5)
- Other (6) _____
- I would not prefer to be educated via brochures or other printed media. (7)

Where would you be comfortable receiving a vaccination? (Select all that apply.)

- Physician's office (1)
- Urgent care clinic (2)
- Pharmacy (3)
- Hospital (4)
- Other (5) _____

Where would you be MOST comfortable receiving a vaccination?

- Physician's office (1)
- Urgent care clinic (2)
- Pharmacy (3)
- Hospital (4)
- Other (5) _____

Are you aware that pharmacists can administer vaccinations in Mississippi?

- Yes (1)
- No (2)

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