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Acceptability and Feasibility of Healthcare Communication Considerations for altering perceptions towards Influenza Vaccine: A Qualitative Study

Masters in Science in Pharmaceutical Sciences
With emphasis in pharmacy Administration

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December 2022

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ABSTRACT

Background

Influenza (influenza) is a contagious disease, causing thousands of deaths every year. The Advisory Committee on Immunization Practices (ACIP) recommends routine annual influenza vaccination for all people over 6 months of age who do not have contraindications, yet the vaccination coverage for 2018-19 season was 49.2%, around 20% less than the goal set by Healthy People 2030 of 70% coverage. The national foundation of infectious diseases survey showed that 51% of respondents do not think the flu vaccine works, 34% are concerned with the side effects from the vaccine, and 22% are concerned about getting flu from the vaccine. This shows that there is some misinformation spreading around the public about the influenza vaccine which highlights the need for improved communication.

Objectives

The objective of this study is to understand the acceptability and feasibility of the use of the five healthcare communication considerations in a community pharmacy setting for improving how adults perceive or value the influenza vaccine.

Methods

This study conducted semi-structured interviews based on the Healthcare communication considerations developed by Nowak. Independent community pharmacists practicing in Mississippi were invited to participate. All interviews were conducted via telephone between September and October 2021. Audio recording were auto transcribed and edited using Trint

platform. Deductive analysis was incorporated to analyze themes and understand, not only respondents' perspectives of the five healthcare communication strategies, but also the acceptability and feasibility of the strategies using the previously discussed definitions.

Results

Seven community pharmacists in Mississippi were interviewed. Community pharmacists believed that the healthcare communication considerations were acceptable and feasible to carry out in a practical setting but highlighted risks to acceptability such as time and lack of personnel.

Conclusion

Apart from providing scientific facts and information, community pharmacists should integrate social psychological value with the healthcare communication consideration. Integrating social psychological values are important when improving adult perception of vaccine because individuals' medical decisions are influenced by subjective appraisals. Future studies should look at understanding the impact of workload for community pharmacists who are vaccinator.

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CHAPTER 1

INTRODUCTION

Influenza (influenza) is a contagious disease, causing thousands of deaths every year [1]. Influenza season in the United States usually takes place between the months of October and May each year [1]. During influenza season, anyone can get the influenza, but it is regarded as particularly dangerous for infants, individuals aged 65 and older, pregnant women, and those with certain chronic conditions such as asthma, neurological diseases, blood disorders, chronic lung disease, endocrine disorder, heart disease, kidney disease, liver disorder and metabolic disorders, and high-risk immunocompromised individuals [1][2]. Fever and chills, sore throat, muscle aches, fatigue, cough, headache, and runny or stuffy nose are the most common symptoms of influenza [1]. According to the Centers for Disease Control and Prevention (CDC), in the year 2018-19, 35.5 million people contracted influenza and 16.5 million visited a healthcare provider due to influenza [7]. The CDC also reported 490,600 hospitalizations in addition to the 34,200 deaths during that influenza season [7].

The seasonal influenza is caused by the influenza virus [3]. There are four types of influenza viruses namely, type A, B, C, and D. Influenza A and influenza B are usually responsible for seasonal influenza [3]. Influenza A viruses usually has two surface proteins, hemagglutinin (HA)

and neuraminidase (NA) [3]. There are a number of different sub-types of influenza A viruses based on the combination of these two surface proteins. Subtype A(H1N1) and subtype A(H3N2) influenza viruses both affect human beings [3]. Influenza B viruses are broken down into lineages and two influenza B viruses namely B/Yamagata or B/Victoria lineage are currently circulating in humans [3]. Influenza C viruses are not easily detectable and may cause minor infections [3]. Lastly, Influenza D viruses affect cattle and are not known to infect human beings [3].

To prevent this infectious disease, influenza vaccinations have been developed. These vaccinations are both clinically, and cost, effective and can reduce influenza-related visits to the doctor [1]. There are three types of influenza vaccines: inactivated influenza vaccine, recombinant influenza vaccine, and live attenuated influenza vaccine [4]. Inactivated influenza vaccine can be either Trivalent or Quadrivalent, where the former contains three ingredients, and the latter contains four ingredients [4]. Trivalent influenza vaccines are made by using an adjuvant and can be used for people aged 65 years and older [4]. The Quadrivalent influenza vaccines have subtypes namely, standard-dose quadrivalent influenza vaccine, quadrivalent cell-based influenza shot, and recombinant quadrivalent shots [4]. The standard-dose quadrivalent vaccines are made by growing the virus in chicken eggs. This vaccine is approved for both people aged 6 months and older (via needle) and for people aged 18 to 64 years via jet injector [4]. In the case of a quadrivalent cell-based influenza vaccine, it is manufactured by growing the virus in a cell culture and is approved for use for people aged 4 years and older [4]. Lastly, recombinant quadrivalent influenza vaccine is an egg-free vaccine and is licensed for people aged 18 and older [4].

The Advisory Committee on Immunization Practices (ACIP) recommends routine annual influenza vaccination for all people over 6 months of age who do not have contraindications. However, the vaccination coverage for 2018-19 season was 49.2%, around 20% less than the goal set by Healthy People 2030 of 70% coverage [5][6]. Vaccination coverage among children and adults was reported to be between 46-81% and 34-56% respectively [5]. This coverage also varied greatly from state to state [5]. The lowest coverage of influenza vaccine was seen in Nevada (34%) and the highest coverage state was reported to be Rhode Island (56%) [5]. The CDC estimated an increase of just 5% in vaccination coverage would have prevented between 4,000 and 11,000 hospitalizations [5].

Previous research has identified a number of important barriers to individuals receiving the influenza vaccine. Individual level barriers to obtaining the influenza vaccination include lack of knowledge of vaccine recommendations and misconceptions about vaccines, vaccine safety concerns, and negative attitudes towards influenza vaccination [8][9]. Additional individual level barriers also include poor health literacy, lack of recommendation of by healthcare providers, and lack of understanding of infectious diseases [10][11].

Patients' awareness and knowledge, attitudes, perceptions, and willingness to get vaccinated can also play a role in the uptake of influenza vaccine. Previous studies have consistently shown that adults who perceive that the influenza vaccine is very effective are more likely to get vaccinated every year compared to adults who perceive that the influenza vaccine is not effective [12][13].

A study conducted by Choucair et al, reported 78% of individuals perceived influenza to be a serious disease even though only 18% thought vaccination provided protection against influenza [14]. Around 30% considered vaccine effectiveness to be less than 50% [14]. Previous research has also looked at racial and ethnic disparities among adults with respect to beliefs about the influenza vaccine [15][16]. Both studies reported that whites were more likely to have positive attitude towards influenza vaccine and believed influenza vaccine was effective when compared to blacks and Hispanics [15][16].

Clinician-level barriers include inadequate reimbursement for the time taken for patient counselling and education about the vaccination [18]. Approximately 34% of clinicians and pharmacists also reported specific issues with documentation including lack of knowledge about the state or city's inclusion of adults in their Immunization Information Systems (IIS), a discrepancy with electronic systems linking to IIS, lack of knowledge regarding the operation between Electronic Health Records (EHR) and IIS, and whether the use of IIS is required by the law [18]. Another study reported that approximately 66% of providers believed that consumers do not get vaccinated because of misconceptions and beliefs such as fear of needles and adverse effects [19].

However, consumers stated that they did not get vaccinated because the provider failed to recommend the vaccine and not knowing when to get the vaccine [19]. The study also reported that most consumers had insurance coverage and only 14% of consumers considered immunization costs to be high, whereas approximately 66% of providers reported that cost was

one of the main barriers to immunization [19]. Many people in the US who chose not to be vaccinated were considered to have a lack of awareness and knowledge of the influenza vaccine suggesting a need for better communication between patients and providers [13].

A number of studies have been completed to improve communication between patients and providers regarding vaccinations. For example, Van Amburgh et al. developed an intervention in which high-risk individuals, at a rural primary care clinic, received information about the vaccine, and then they could receive the influenza vaccine during a subsequent clinic visit [20]. This intervention saw a 26% increase in the uptake of influenza vaccine [20]. Another study from 2017 looked at patient experience with patient reminder/recall services and found that patients had little knowledge about different vaccinations and did not have prior experience with patient reminder/recall but wanted to receive it in the future [21]. The value of reminder calls was also replicated in another study examining the uptake of any type of adult vaccination for adults aged 65 years and older [22].

Community pharmacists can address misconceptions, myths, and a lack of knowledge about the influenza vaccine and the virus with effective communication and help improve vaccination rates [23][24]. A study by Berce et al. in 2020, analyzed the statewide vaccine registry in Wisconsin pharmacies and reported that the uptake of influenza vaccination was moderate to high (20%) [25]. The survey also showed that 86% of pharmacists provided immunizations at their pharmacies [25]. The study concludes by suggesting that for pharmacists to be fully utilized as

immunizers, pharmacists need to have active interaction not only with patients but also with healthcare providers [25]. Community pharmacists have been shown to be capable of successfully providing vaccines to patients, especially when in rural settings [7]. However, the delivery of influenza vaccines by pharmacists can be further optimized and scaled up, which includes helping patients to change their perceptions about vaccinations. One way to improve or alter the vaccine perception is to integrate social psychological values with communication principles [26].

CHAPTER 2

Framework for understanding how to ameliorate negative perceptions of influenza vaccine

Communication campaigns are considered core components of efforts to improve vaccine perception value in adults [26]. Therefore, it is essential for programs to focus on articulating value-related outcomes, understanding what to do in order influence value perceptions and prepare campaign efforts in health communication considerations which may increase the likelihood of success [26]. To begin it is important to understand that economic value and social psychological value are different from each other [26]. Economic value includes use of cost-benefit analysis for assessing vaccines whereas social psychological value focuses on how individuals perceive benefits and importance of vaccines [26]. Nowak et al., developed a series of health communication considerations which integrates economic and social psychological values into health communication principles that focuses on improving adult vaccination value perceptions [26].

According to Nowak there are five core health communication considerations: 1) target audience focus, 2) exchange of value, 3) understanding of specifics for campaign success, 4) the 4 Ps of efforts [26]. The target

audience focus consists of two parts. First, it involves identifying a specific population of focus for the campaign to develop efforts to address under-valuation of adult vaccine [26]. Second, once the identification of target audience is completed, communication and education strategies should be developed based on the perceptions of the target audience [26]. Exchange of value involves efforts to demonstrate the worth of the vaccine to increase individuals' perception of the vaccine [26]. Understanding of specifics for campaign success requires understanding the current adult vaccine perception of value and how that might be changed by applying interventions targeted at knowledge, understanding, attitudes, and behaviors [26].

Nowak et al. suggest that the 4 "P's" of marketing; product, price, promotion and place, can play a role in influencing how adults perceive or value adult vaccination beyond messages and information [26]. For example, by effectively using promotion to convey product benefits that meet patients' needs and desires, minimizing price with respect to finances, time, and psychological burdens, and ensuring that the place where vaccines can be received is convenient, can improve patients' valuation of vaccines and ultimately improve uptake [26]. Lastly, the fifth consideration is communication research, which involves using qualitative research, material testing, tracking of success with vaccine administration, and field experiments to increase providers' ability to understand and ultimately influence adults' value perception of vaccines [26].

OBJECTIVES

The objective of this study is to understand the acceptability and feasibility of the use of the five healthcare communication considerations in a community pharmacy setting for improving adults' perception of the influenza vaccine.

CHAPTER 3

METHODS

Study Design:

This study utilizes a descriptive study design using semi-structured in-depth interviews. To ensure consistency and transparency in the conduct and reporting of the study and study findings, the consolidated criteria for reporting qualitative research guidelines (COREQ) were used to guide study design and conduct [27] (Supplementary material: Appendix A).

Sample Population:

A sample of community pharmacists practicing in independent pharmacies was recruited by employing a purposive sampling strategy. Independent community pharmacies were selected for this study as they have the capacity to create their own policies and conditions for the supply of medications or other necessary supplies within their setting, whereas chain pharmacies have specified terms and policies developed by central and corporate management. To be included in the study, community pharmacists need to have graduated from an ACPE-accredited pharmacy degree program, be currently practicing in an independent community pharmacy, and currently employed in independent pharmacies located in Mississippi. Community pharmacists were

recruited through faculty members of School of Pharmacy at University of Mississippi as they have established a relationship with the faculty member and the University. A total of 15 community pharmacists were contacted by telephone or email.

Data Collection:

15 Participants were contacted via email and/or telephone from the list of community pharmacists generated by faculty members of School of Pharmacy at University of Mississippi and were informed regarding the purpose of the research and how their opinion will contribute to help improve healthcare. Out of the 15 only 7 participants responded and were interviewed. Informed consent was taken from the participants before conducting interviews. All data was collected by conducting telephone interviews between September and October of 2021. Each interview was constructed to be completed within 30 minutes. For the purpose of data analysis, all the interviews were audio-recorded with the approved consent of the participants. Ethics approval (Protocol #22x-010) was obtained prior to data collection from the IRB at the University of Mississippi.

Interview guide:

To begin, participants were asked their age, gender, whether they have a PharmD, number of years in practice, whether their pharmacy is in a rural, suburban, or urban area, and the average number of influenza vaccines given per week during the normal influenza season. Next

participants were asked to discuss the five communication considerations through the lenses of both acceptability and feasibility [26].

According to Johnson et al., acceptability pertains whether the expected outcome of a proposed strategy meets the expectations of stakeholders [28][29]. There are three ways to assess acceptability; risk, return, and reaction of stakeholders [28][29]. Risk is the extent of unpredictable outcomes or rather possible negative outcomes of the proposed strategy [28][29]. Return is the financial effectiveness of a strategy [28][29]. Reaction is the response of stakeholders to the proposed strategy [28][29].

Feasibility is concerned with whether a strategy could work in practice and an organization that has the potential to deliver a strategy [28][29]. There are several indicators for feasibility including financial feasibility, people's skills and knowledge and integration of resources to understand whether the proposed strategy would work practically [28][29]. Financial feasibility is related to the funding required for the proposed strategy which can be influenced by current financial situation and overall goal of the organization. People's skills and knowledge includes whether people in the organization have the right skills, knowledge, and experience to capably deliver a proposed strategy. Lastly, integrating resources includes physical resources such as buildings, information, technology, and resources for suppliers.

To explore these themes of acceptability and feasibility with respect to the five healthcare communication considerations, questions were developed to understand whether community

pharmacists engaged in every aspect of the healthcare communication consideration. For exchange of value consideration, the adult vaccine perception of value spectrum containing indicators were used to understand community pharmacists' engagement [26] (Supplementary material: Appendix A). For example, community pharmacists where asked how they spoke to adults about the importance of getting influenza vaccine. This question is pertaining to exchange of value considerations and explores people's skills and knowledge which is an important indicator of feasibility. Adult vaccine perception of value spectrum consists of three categories namely: not or little valued, moderately valued, and highly valued. Table 1 below explains the three categories of adults' vaccination perception of value [26]. These indicators can be used to valuate current perceptions of adult vaccinations, direct efforts to alter value perceptions and assess the efforts' effectiveness to change value perception [26]. Nowak suggests using these outcomes to determine current valuation of vaccine, guide efforts to alter perceptions and assess the effectiveness of these efforts [26].

Table 1: Adult Value Perception of Adult Vaccine

Not or little valued	Moderately valued	Highly valued
• No or limited awareness or knowledge of adult vaccines • No or limited understanding of importance of adult vaccine to individual or public health • High awareness of adult vaccines but low uptake or	• Some awareness or knowledge of adult vaccines • Some understanding of importance of adult vaccine to individual or public health • Neutral or slightly positive attitudes or beliefs towards vaccines.	• High awareness of adult vaccines • Good understanding of importance of adult vaccine to individual or public health • Positive attitudes and beliefs towards vaccines

intentions to receive • Relatively negative attitudes or beliefs towards vaccines • Perceive minimal or no benefits for adult vaccines • Decline recommended vaccines	• Believe some vaccines have benefits or are beneficial • Passive acceptance of provider recommendations or acceptance of some recommended vaccines	• Believe vaccines have significant benefits • Acceptance of provider recommendations or recommended vaccines • Actively request vaccinations

Data analysis:

After conducting the interviews, all the digital audio recordings were transcribed using an artificial intelligence supported software called Trint. These transcripts were repeatedly read (5 reads), edited, cross-checked, and verified by principal investigator. A deductive analysis was incorporated to analyze themes and understand, not only respondents' perspectives of the five healthcare communication strategies, but also the acceptability and feasibility of the strategies using the previously discussed definitions [28][29]. Once familiar with the depth of the overall data, the transcripts were further inductively analyzed to identify any codes that were not captured during the deductive analysis. These codes were then applied to each of the transcripts for data extraction and the final determination of themes for presentation in the results section.

CHAPTER 4

RESULTS

A total of 7 semi-structured interviews were conducted wherein data saturation was achieved and no new insight was being gained [30]. Out of the 7 interviews conducted, 71.4% of participants graduated with a Doctor of Pharmacy degree as their highest practice degree(n=5) and 28.6% of participants graduated with a Bachelor of Science in Pharmacy degree (n=2). The mean year of getting a license to practice pharmacy was 2006 (1980-2020). On an average, each interview was completed in approximately 30 minutes. Approximately, 57% (n=4) of participants self-reported their pharmacies being in a rural place, 14% (n=1) of participants practiced in a suburban location and 29% (n=2) of participants practiced in an urban location. The average number of influenza vaccine given per week ranged between 10 and 100.

Table 2: Participants' Characteristics (n=7)

Variables	Community Pharmacists (n=7)
Year of obtaining License (mean, SD)	2006 (1980-2020)
Highest Degree (n, %)	
Pharm D	5 (71.4%)
BS in Pharmacy	2 (28.6%)
Location of Pharmacy (n, %)	
Rural	4 (57.1%)
Suburban	1 (14.3%)
Urban	2 (28.6%)
Avg Influenza shots per week (mean, SD)	38.57 (30.648)

In the following sections pharmacists' responses to questions pertaining to each healthcare communication strategy will be outlined. Next, to understand acceptability and feasibility of each of the five healthcare communication strategies to pharmacist respondents, the definitions of acceptability and feasibility developed by Johnson et al., were applied [28].

Target Audience:

Some pharmacist participants discussed actively targeting patients who may be eligible for the influenza vaccine. Participant 7 stated, "We usually just start by asking them. We know a lot of them would already have access to and they trust us very well. So, we would just ask if like, "Hey have you got any influenza shots this year?" Participant 2 stated, "What we do is we, number one, we work off a list of customers that we gave a vaccine to them a year before, so we send a postcard to each person that … we gave a vaccine to the year before. And then we will then do a printout off our computer and concentrate on customers that are 65 and above ... We do have newspaper advertising also". None of the participants had a formal method to determine how patients perceived the vaccine.

Exchange of Values:

All participants understood the "value" of the influenza vaccine and explained the importance and benefits of it to patients, while also addressing questions and misconceptions. Participant 5 mentioned importance of influenza vaccine stating, "[I just] tell them the benefits of it and, you

know, safety profile, that, a lot of stuff with COVID now, people worry about how safe it is and influenza shots have been around for so long." While dealing with patient questions, pharmacists talked about tailoring their conversations to patient specific needs, as participant 4 stated, "It all varies depending on the patient and the perceptions that they already have … sometimes people are agreeable and willing to kind of reconsider. Some people who just…are not going to really change their ideas."

Understanding of specifics for campaign success:

All participants had anecdotal evidence of the current adult perception of value of influenza vaccine, Participant 1 spoke about, "[A] pretty wide variety around here. [From] those that are completely opposed, and I will never talk them into it. And then those who, start calling in the first part of August and see if we've got them." Participant 2 stated that, "My opinion is that 50% of our population does not have the correct and enough information to make an informed decision about whether to get one or not, they need more education." However, none of the participants had a formal way of collecting data on patients' vaccine perceptions. When asked if they were to collect data on patient attitudes, participants were either inclined towards using surveys or using face-to-face interviews as the method of data collection. Participant 4 stated, "I think it will be a survey.", while participant 1 stated, "Just maybe an interview form, you know, just a few questions on the phone we can ask and jot down their answers."

4P's of Marketing:

Participants did not discuss specific vaccine brands (products) but are rather focused on promoting the value and benefits of products. Participant 4 stated, "And then we promote, like on our social media, when we have influenza shots available and usually share some facts about the influenza vaccine … or sometimes we go out into the community just to kind of educate and share information." Pharmacist participants also spoke about place, or the physical location, and availability of influenza vaccination. Participant 6 spoke highlighted differences in getting immunized at a clinic and at a community pharmacy and said that coming to a community pharmacy for their shot is , "… a plus … because they're not going to be around so many sick people. I would say, especially in our store, our store is pretty large and where we do it is off to the side, you know, it is just easy. So, they're not exposed so much as sickness ..." All participants mentioned that the bulk of their patient populations were covered by some form insurance, with as Participant 1 said, "10% maybe, yes [out-of-pocket]. It's pretty well covered", making price a non-issue for most patients.

Communication research:

Most participants tracked the number of influenza vaccines given by their pharmacy using their own system and the Mississippi registry to understand the success of administration. Participant 5 stated, "Yes, so we use our own pharmacy system to track it and also mix (integrate) the Mississippi immunization registry." Whereas participant 1 stated, "Yeah, we can probably. Yes,

we could track them. We do not track them, but we could. We usually enter them into the pharmacy system."

Acceptability and feasibility:

Looking across each of the five healthcare communication considerations pharmacist respondents reported engaging in aspects of each of them. For target audience, pharmacists responded that they identified individuals to target specifically for the influenza vaccine. Pharmacists successfully added value to influenza vaccine by discussing the importance, misconceptions, and benefits of getting the vaccine and ability to answer patient questions relating to influenza vaccine covering each aspect of the exchange of value consideration. For understanding and specifics, all the pharmacists felt they had a good understanding of patient attitudes and awareness of influenza vaccine in their vicinity. Participants were also involved in the promotion of influenza vaccine, providing influenza vaccine at an affordable cost and use of different locations for providing influenza vaccine. Lastly, participants were involved in tracking and reporting on the number of influenza vaccine.

However, none of the respondents engaged in all the described activities of each consideration. while targeting audiences, none of the respondents had a formal method to determine how individuals perceive influenza vaccine. As the second step of target audience is developing communication and education strategies guided by the perspective of individuals, understanding of perception of influenza vaccine is essential [26]. Similarly, for understanding and specifics

consideration, pharmacist participants did not engage in collecting data on patient attitudes and understanding. Data collected on patient attitudes and understanding can be used to gauge the current adult valuation perception and can be used an indicator to assess whether a target audience and their perceptions have altered and moved into the right decision. Use of knowledge, understanding, attitudes and behavior can be a tool to assess the current perception of influenza vaccine [26]. Participants stated that they would consider engaging in collecting data on patient attitudes, either via a brief survey or in an interview form.

Risk:

Participants highlighted some potential risks to the acceptability of the healthcare communication strategies. Participant 4 said, *"I think just time and manpower would be the biggest barrier just because we have limited resources and number of people who are working..."* Participant 6 stated, *"I am the only vaccinator…. I work most everyday but sometimes I'll take a day off. And the pharmacist that works for me, she's not a vaccinator. So if we have someone come in to get the influenza vaccine and she is there, she is not able to give it, so we have to tell them to comeback. So that's the biggest barrier right now that I can think of."*

Return:

Pharmacy respondents seemed to believe that the healthcare considerations are financially effective. Participant 5 mentioned, "there is a lot of things we can do which does not require funding… a voice on social media… influence family and friends, providing immunization at churches… talking to local media". Similarly participant 6 stated, "we are not spending a lot of

money for advertising… it is just working towards it… making phone calls. I think it's more of a time issue than money in my opinion". Financial effectiveness would also depend on the pharmacy, whether it is an established pharmacy or a new pharmacy. Participant 4 mentioned, "I am trying to say, like the number of immunizations versus cost and what it takes to have someone available for these things and to advertise. We do a good number of vaccines, so I don't think we would have to have extra help… but if they were a pharmacy just starting out, they may need it".

Reaction of stakeholders:

All pharmacist participants showed positive reaction towards the implementation of these considerations. When asked specifically about the considerations, participant 3 mentioned, "And in most instances, yes … with how our set up is I think maybe a slower pace store maybe a bit more room with time to educate people and do all that would definitely be an increase [in the number of influenza vaccines] …". Participant 4, mentioned, "I definitely think so [advertising plays an influence] because that gives them time to kind of look at the information on their own and process it… do any research that they may want to do in advance as well… I think at this point, it is worth investing a little time and money to educate".

Financial Feasibility:

All participants, when asked about the financial feasibility, believed that the implementation of healthcare communication considerations is financially feasible. Participant 3 stated, "I don't think it would cost very much to. It usually is going down to time. You know, it's the old age time

is money". Participant 1 expressed, "Not necessarily. I think if we were to do more direct-to-consumer advertising, I guess, it would require more funding or that. Otherwise no". Aspects of the healthcare communication consideration which majorly required funding was advertising or direct-to-consumer-advertising. Participant 7 stated, "I think a lot of advertising prevents patients from a lot of things, so they definitely have an influence … I do believe that is something we can improve on. You know, advertising when we get our influenza shots in, but I do believe it is financially feasible."

<u>People's skills and knowledge:</u>

Pharmacists possess skills and knowledge which help in certain aspects of healthcare considerations such as actively educating and addressing patient questions. Participant 4 spoke about actively educating individuals who walk into a pharmacy and stated, *"… we start trying to offer them, basically everyone who walks in the pharmacy door. So, it usually leads to a conversation about the safety and effectiveness, you know, depending on what questions they may have … and usually share some facts about the influenza vaccine [on social media] …".* Participant 1 explains addressing patient questions regarding immunization and mentioned:

> *"I just never tried to never make them feel like there's a dumb question. All questions are great questions. Try to answer them with as much positive information as I can and not hide anything from the truth. But I think more importantly, just listening to their concerns and then addressing their individual concerns specifically, usually goes a lot further than just blasting them with a bunch of hard facts."*

Integration of resources:

Integrating resources plays an important role not only in the feasibility of the healthcare considerations but also for the implementation of each aspect of the considerations such as providing information on influenza vaccine, location, advertising, immunization history records, and tracking of successful implementation. On providing immunization history, participant 6 stated, “usually we have immunization records in our store. We can provide that… we always get printouts to tell them when they received their shot, that date and all that information”. Participant 4 stated, “so we have like small little information on machines for people who may have questions or sometimes we go out into the community just to kind of educate and share information”. Participant 3 stated, “This year I am going to start offering to go to certain businesses to give [influenza vaccines] if there is enough interest … So that will be a good opportunity for people…

CHAPTER 5

DISCUSSION

This study describes the acceptability and feasibility of the five healthcare communication considerations in a community pharmacy setting. The aim of the five healthcare communication considerations is to improve how adults perceive or value influenza vaccine. While the community pharmacist participants believe that the considerations are acceptable and feasible to carry out in practice, they also suggested risks to the considerations such as lack of time and workload. In relation to the five healthcare communication considerations community pharmacists engaged in identifying eligible individuals for influenza vaccine. Pharmacists also looked to add value to influenza vaccine by emphasizing the importance and benefits of receiving the vaccine, addressing patient questions and misconceptions regarding the influenza vaccine. According to Bach and Goad, pharmacists are in the position to engage in conversation to prompt importance and benefits of the vaccine and to dispel misconceptions of the vaccine [24]. A systematic review by Burson et al. investigated the acceptability, feasibility, and effectiveness of community pharmacies as a location for adult vaccinations and reported that pharmacies can provide cost-effective in-house immunization services as they provide patients with convenient and accessible site for immunization [31]. A study from 2014 showed that the total direct cost

for influenza vaccine administration was cheaper at community pharmacies compared to other sites and patients incurred the least out-of-pocket cost for influenza vaccine obtained herein [32].

Each aspect of the communication considerations looks to improve adult perception of vaccine and specifically for influenza vaccine and our study shows that community pharmacists can carry out these considerations in a practical setting. Yeung et al. conducted a systematic review on factors related to uptake of influenza vaccine among adults [33]. They concluded by highlighting factors such as adult perception of vaccine safety and efficacy and advice from health professionals were related to influenza vaccination uptake among adults [33]. Community pharmacists are also in the position to influence how adults perceive vaccine and indirectly may play a role in the uptake of influenza vaccinations.

Pharmacists did not discuss the different types of influenza vaccines as products but emphasized the benefits and value of influenza vaccine by showing engagement in advertising influenza vaccine (ex. banners outside their store, local newspaper, social media), cost, and providing influenza vaccine at different locations apart from their physical pharmacies (ex. In schools, churches, workplace). Most of the pharmacists reported that their patients had insurance coverage, which meant they did not have charge patients directly for this service. A systematic review by Burson et al. also highlighted that vaccine promotion improved influenza vaccination [31]. Community pharmacists did not engage in collecting formal data on patients' perceptions and attitudes. However, community pharmacists showed interest in collecting data on patient attitudes via a brief survey or face-to-face interviews. Such information can be used as indicator

and assess the adult vaccine valuation spectrum highlighted by Nowak [26]. Erickson highlights data collected and stored in pharmacies is an essential tool and can be used to untangle the complexity of healthcare environment [34].

Overall, community pharmacists believed that the healthcare communication considerations were feasible to carry out if implemented in practice. Pharmacists believed that the considerations were financially feasible and that they had the skills, knowledge, and resources needed to implement these considerations. Our study also highlighted pharmacists having the right skills and knowledge to provide immunization services and interact with patients. Gerges et al conducted a study analyzing pharmacists' experience and perceptions of their role as vaccinators and found that pharmacists were satisfied with their role as vaccinators as it increased their skills, knowledge, and interaction with adults [35].

With respect to acceptability, community pharmacists provided positive reactions to the considerations and believed that the healthcare communication considerations would potentially provide a positive return. However, pharmacist participants highlighted practical limitations and risk to the implementation of communication considerations, believing that they lack the time to educate individuals, carry out advertising, and collect data on patient attitudes. Gerges et al. highlighted that vaccinating patient added additional workload on pharmacists within their setting [35]. Pullagura et al, conducted a study to explore influenza vaccine hesitancy in community pharmacies and reported barriers such as availability of time and additional workload in community practice to pharmacist's' engagement in discussing with influenza

vaccine hesitancy had barriers [37] Houle suggests that pharmacists engage in activities such as nonprescription drug consultations, dispensing of pharmaceuticals and medication review which contributed to their workload [38]. Adding immunization services to this mix can increase workload [38]. Previous studies also highlighted lack of time and space as barrier to the implementation of immunization services [35,39,40].

Limitations

This research was a descriptive study using semi-structured interviews. This study included 7 different community pharmacy participants who were recruited solely from Mississippi. There might be additional views of community pharmacists in other areas of Mississippi and states of U.S. which may lead to different opinion on the acceptability and feasibility of the healthcare communication considerations. Therefore, the findings of this study should be interpreted with caution though certain aspects of the findings might be transferable to other similar settings. The study shows that pharmacists found the healthcare communication considerations were acceptable and feasible to implement in a practical setting but highlighted risks to acceptability such as lack of time and staffing and added workload on the pharmacists.

Conclusion:

This study looked at the acceptability and feasibility of healthcare communication considerations developed by Nowak to improve adult perception of influenza vaccine. Better communication

and education of patients about the influenza vaccine can aid the process of improving patient understanding and perception of influenza vaccine. Pharmacists expressed an overall positive response towards the acceptability and feasibility of the healthcare communication considerations, however, community pharmacists highlighted risks such as lack of time and additional workload. More research is needed to understand the impact of workload for community pharmacists who are vaccinators.

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APPENDIX

SUPPLEMENTARY MATERIAL

Appendix A. Consolidated criteria for reporting qualitative studies (COREQ): 32-item checklist

Item	**Description**
Domain 1: Research team and reflexivity	
Personal characteristics	
1. Interviewer/facilitator	One author (SJ) conducted the semi-structured interviews
2. Credentials	Bachelor of Pharmacy (B.Pharm)
3. Occupation	Graduate student
4. Gender	Male
5. Experience and training	Trained in primary research, experience in conducting data analysis.
Relationship with participants	
6. Relationship established	The interviewer did not have any relationship prior to the interviews with all the participants.
7. Participant knowledge of the interviewer	Participants were informed that the researcher was a Graduate student in Pharmacy Administration program in the University of Mississippi – School of Pharmacy, and his goal with the interviews was on understanding the acceptability and feasibility of healthcare communication considerations in a community pharmacy setting.
8. Interviewer characteristics	SJ is a pharmacy graduate student and interests in the research topic derives from his interest in influenza and immunization.

Domain 2: Study design	
Theoretical framework	
9. Methodological orientation and theory	Reported in methods section.
Participant selection	
10. Sampling	Reported in methods section.
11. Method of approach	Reported in methods section.
12. Sample size	Reported in methods section.
13. Nonparticipation	All the participants who responded to the study invitation were interviewed.
Setting	
14. Setting of data collection	Reported in methods section.
15. Presence of nonparticipants	No nonparticipants were present during the interviews.
16. Description of sample	The characteristics of the sample are provided in Table 2.
Data collection	
17. Interview guide	Reported in the methods section. Appendix B.
18. Repeat interviews	No repeat interviews were carried out.
19. Audio/visual recording	Reported in methods section.
20. Field notes	Field notes were made after the interviews.
21. Duration	Reported in methods section.
22. Data saturation	Reported in methods section.

23. Transcripts returned	Transcripts were not returned to participants for comment and/or correction. However, they were offered the option to receive a summarized report of the study results.
Domain 3: analysis and findings	
Data analysis	
24. Number of data coders	Reported in Data analysis section.
25. Description of the coding tree	Reported in Data analysis section.
26. Derivation of themes	Reported in Data analysis section.
27. Software	Reported in Data analysis section.
28. Participant checking	Participants were offered a summary of the results but not their transcripts to be checked.
Reporting	
29. Quotations presented	Reported in results.
30. Data and findings consistent	Reported in results.
31. Clarity of major themes	Reported in results.
32. Clarity of minor themes	Reported in results.

Appendix B. Interview guide used when conducting semi-structured interviews

Interview guide:

- Presentation of the interviewer and thanking participants for their time
- Purpose: the purpose of today's interview is to seek feedback from independent community pharmacists in Mississippi to understand their perspectives on a communications strategy to improve adults' perceptions of the influenza vaccine.

- Instructions: The interview will take no longer than 30 minutes. For research purposes, I will audio record the interview. All the information you provide during this interview will be kept confidential. Please be aware that there are no wrong answers. You are the expert here and we are doing this interview to understand your perspective

To begin, I have basic background questions.

- What is the highest pharmacy degree you have obtained?
- In what year did you receive your license?
- Would you consider your practice to be located in a rural, suburban or urban space?
- Lastly, what is the average number of influenza vaccine given per week during the normal flu season by your pharmacy?

Thank you for answering those! Now I will ask you a series of question pertaining to the communication strategies.

Target audiences:

- How do you or your pharmacy identify patients who are eligible for an influenza vaccine each year?
- How does your pharmacy approach patients who are eligible for influenza vaccine?
    - Are there any challenges you face?
- Does your pharmacy have a method to determine how patients perceive flu vaccine?

Exchange of values

- How does your pharmacy convey or explain the importance of influenza vaccine to patients?
- How do you talk with patients about the benefits of getting the influenza vaccine?
    - Are there instances where you might have highlighted positive experiences with vaccine to emphasize the benefits of influenza vaccine? for ex. Telling individuals that you yourself have been vaccinated.
- Can you describe your experiences with addressing patient questions regarding the vaccine?
    - What kinds of questions do they generally have?

How do you converse with patients who have misconceptions about the influenza vaccine? For ex. Some individuals think they might get the flu if they get vaccinated.

Understanding and specifics of successful communication

- Based on your past experiences, can you explain what are patients' attitudes towards influenza vaccine?
    - Do you collect any formal data on patient attitudes towards vaccines?
    - Could your pharmacy collect this data via a brief survey? If no, what would you need to collect this type of data?
- Based on your past experiences,
    - What is your opinion on patient awareness of influenza vaccine?
        - Benefits of the vaccine.
    - Do patients understand the importance of influenza vaccine?

Product, price, place, and promotion (4P's of marketing)

- Does your pharmacy actively educate patients about the need for and safety of the influenza vaccine?
- Do you think it's important to provide patients with immunization history of influenza vaccine?
    - If yes or no, please explain?
- Do you think it is possible to provide influenza immunization in any other location apart from your pharmacy?
    - Do you think it is feasible in monetary terms?
- Do you think Direct-to-consumer-advertisement for influenza vaccine plays a role in convincing individuals to get the flu shot?
    - Do you think it is feasible in monetary terms?
- What percentage of your patients pay out of pocket for the flu vaccine? If there is a higher proportion, then
    - Does your pharmacy have any discounts or provide coupons for influenza vaccine?
    - If yes, do you feel that has increased uptake of vaccines?

Communication efforts

- Are there any resources your pharmacy uses to track number of influenza vaccines administered?
    - If yes, how are these numbers reported to pharmacy staff?

If yes, have you noted any changes in the average number of vaccines given year over year?

Practicality of these communication strategies

- Do you think this framework, if implemented in a practical setting, will give back a positive return?
- Do you think implementing this Framework in a pharmacy setting will require funding?
    - Will this strategy be financially feasible?

Are there any other barriers to the implementation this framework/strategy within your pharmacy?

- Thanking the participant
- Offering to send them a draft of the findings for review

VITA

SAUMIL JADHAV

A driven, dedicated, strategic and result oriented individual with ability to multitask and collaborate well with others. Highly organized and competent in written and verbal communication. Experience in Qualitative and Quantitative primary research and analytical skilled demonstrated with projects. Good leadership qualities and consistently thrives in a fast-pace environment with the ability to strategically develop. Ability to complete tasks under strict timelines, adapt to leadership styles and exhibits innovation and persistence in meeting goals to completion.

EDUCATION

THE UNIVERSITY OF MISSISSIPPI (OLE MISS) Oxford, MS Aug 2019 – Present
• Doctor of Philosophy (PhD)
• Master of Science (MS), Pharmacy Administration

MANIPAL ACADEMY OF HIGHER EDUCATION (MAHE)
• Bachelor of Pharmacy (B. Pharm), Pharmaceutical Sciences

RESEARCH EXPERIENCE

University of Mississippi Oxford, MS Aug 2019- Present

Acceptability and Feasibility of Healthcare Communication Considerations for altering perceptions towards
Influenza Vaccine
• Conducted an interview study to understand community pharmacists' perspective on the acceptability and feasibility of healthcare communication considerations.

Mapping the impact of the COVID-19 Pandemic on Pharmacy Graduate Students
• Facilitated interviews with pharmacy graduate students in US.
• Carried out data collection and cleaning along with analysis on the impact of Covid-19 on pharmacy graduate students in US.
• Manuscript submitted to and accepted by Research in Social and Administrative Pharmacy.

Prescribing trends of Proton Pump Inhibitor, Benzodiazepine and Antipsychotics among Medicare Part D Subsidies
• Performed literature review on Deprescribing interventions for Proton Pump Inhibitors, Benzodiazepine and Antipsychotics.
• Identifying prescribing patterns of Proton pump inhibitors, Benzodiazepine and Antipsychotics among older adults.
• Collaborated with graduate student in manuscript writing.

Role of Social Determinants of Health in Pneumococcal Vaccination among high-risk adults
• Carried out in-depth literature review.

• Manuscript submitted and accepted by JVAC – Elsevier.

Drug-drug Interactions of Potentially Inappropriate Medications in Older Adults
• Contributed by carrying out in-depth literature review.
Cost-effectiveness Analysis of Upadacitinib and Methotrexate Resistant Rheumatoid Arthritis
• Designed a Decision Tree model.
• Carried out a Cost-effectiveness analysis of upadacitinib compared to first line therapy, methotrexate for the treatment of Rheumatoid Arthritis.

Prenatal Vitamin Use Among Pregnant Women
• conducted analysis as part of UM-DUR analyst.
• Identified prenatal vitamin use among pregnant beneficiaries.
• Reported trimester-specific prenatal vitamin use

Manipal Academy of Higher Education Manipal, India Aug 2018- May 2019

Awareness Regarding Newer Trends in Diabetes medication Management
• Analyzed physician behavior on newer trends in diabetes medication

Violations Related to Prescription Drug Claim
• Studied concept of misbranding and violation of prescription drugs.
• Conduct in-depth literature review on critical content violation committed in prescription drugs over two decades.

An Overview of Cost-Analysis between Top Selling Branded and Generic Drugs
• Carried out a Cost-benefit analysis of Branded drugs versus Generic drugs by analyzing the cost of top selling branded and generic drugs in 3 major chronic diseases i.e. Hypertension, diabetes and Asthma

Pzifer India
• Summer Intern
• Underwent technical and practical in the industrial plant of the company
Goa, India May 2017 – Jul 2017

PRESENTATIONS

Study on Awareness Regarding Newer Trends in Diabetes Medication Management
• Selected for poster presentation at ISPOR Europe 2018
Cost-effectiveness Analysis of Upadacitinib and Methotrexate for Patients with Methotrexate resistant Rheumatoid Arthritis
• Selected for poster presentation at Virtual ISPOR North America 2020

HONORS & ACKNOWLEDGEMENTS

• Obtained grade A and above in 27 of 43 courses of undergraduate study at MAHE.
• Received Distinction Award for academics for four consecutive years at MAHE.

• Graduated with a Bachelor's in Pharmacy in First Class with Distinction at MAHE.
• Awarded the Overall Best Sportsperson in undergraduate college from a pool of 800 students.
• Qualified to represent MAHE at South Zone Inter-University soccer tournament held in Dec 2018.
• Member of Rho Chi, Academic Honor Society of Pharmacy

LEADERSHIP ROLES

Vice President, ISPOR student chapter | Manipal
• Organized a pharmacoeconomic workshop with several keynote speakers
Joint Sports Secretary, Student Council | Manipal
• Delegated to and worked with 20 council members.
• Successfully organized over 10 intramural sports competitions in academic year 2017-18.
Captain, Soccer Team | Manipal
• Secured 1st position in intramural competitions in academic years 2016-17 and 2017-18 and reached up to the finals in the academic year 2018-2019.
President, Manipal Football League | Manipal
• Founded the first ever intramural soccer league in MAHE.
• Led a group of committee members towards successfully organizing all events of intramural soccer for the year 2017-18 and 2018-19.

SKILLS AND COURSEWORK

• Software packages: SPSS, SAS, TreeAge software, Microsoft Excel, ExPharm.
• Skills: Survey development, Qualitative data collection and analysis, development of pharmacoeconomics model using TreeAge software.
• Relevant courses (Graduate): Pharmacoeconomics, Quantitative Analysis, Research Methods, Primary data techniques, Health policies, Secondary data techniques, Health Economics, General Linear Model and Generalized Linear Model, mediation and moderation techniques, pharmacoepidemiology