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U.S. Pharmacists' Perceptions of Getting the COVID-19 Vaccine and How That Affects Their Interactions With the Public

Megan Boals
Walden University

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Walden University

College of Health Sciences and Public Policy

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Megan Elizabeth Boals

has been found to be complete and satisfactory in all respects,
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the review committee have been made.

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Walden University
2026

Abstract

U.S. Pharmacists' Perceptions of Getting the COVID-19 Vaccine and How That Affects

Their Interactions With the Public

by

Megan Elizabeth Boals

MPH, San Diego State University, 2006

BS, California State University, Hayward, 2003

Doctoral Study Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Public Health

Walden University

May 2026

Abstract

Pharmacists play a pivotal role in public health, particularly in promoting vaccination. However, vaccine hesitancy among pharmacists significantly undermines their willingness to provide effective patient counseling and to advocate for vaccination, potentially eroding public trust in vaccines. This descriptive-phenomenological study sought to understand the factors contributing to pharmacists' COVID-19 vaccine hesitancy and how this hesitancy affected their willingness to recommend vaccines to patients. Twenty practicing pharmacists were interviewed via Zoom between September 23 and October 14, 2025. The health belief model helped interpret the study findings. Thematic analysis, as described by Braun and Clarke, was conducted to identify and interpret recurring themes related to vaccine hesitancy and professional practice. NVivo software was used to organize and code data. Prior research indicated that uncertainty about emerging scientific evidence can contribute to vaccine hesitancy, even among medically trained professionals, underscoring that knowledge alone does not guarantee vaccine acceptance. Consistent with this literature, the findings of this study suggest that concerns about long-term vaccine safety, rapidly evolving and inconsistent information, limited communication and training, the accelerated vaccine rollout, and personal beliefs all affected pharmacists' confidence in recommending the COVID-19 vaccine. The implications for positive social change include contributing to a deeper understanding of healthcare providers' influence on public health efforts and ultimately supporting higher vaccination rates and stronger community trust in healthcare systems.

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Dedication

I dedicate this capstone to my family, mentors, and colleagues who have supported me throughout my academic and professional journey. Your encouragement, guidance, and belief in my potential have motivated me to persevere and grow. This work reflects the support and inspiration you have provided.

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I would also like to acknowledge my academic program and faculty for providing the knowledge, skills, and opportunities that prepared me to complete this work and further develop my passion for public health.

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Section 1: Foundation of the Study and Literature Review

Introduction

Vaccine hesitancy is a growing problem. Vaccine hesitancy is the delay in acceptance or refusal to receive a vaccine, even when it is available (Azarpanah et al., 2021). The study examines vaccine hesitancy through the beliefs and attitudes of pharmacists and their role in recommending vaccines to the public. Continuing to study vaccine hesitancy, particularly among pharmacists who emerged as hesitant during the COVID-19 pandemic, helped expand existing knowledge and informed public health officials in developing strategies to address the problem. The problem explored was pharmacists' beliefs and attitudes, and whether these could adversely affect their willingness to recommend vaccines to the public. In this section, I describe vaccine hesitancy and examine it in relation to pharmacists' beliefs and attitudes, as well as its effect on their willingness to fulfill their professional roles. Based on the study's outcomes, there was potential for positive social change, including increased vaccination uptake and greater willingness among pharmacists to set aside personal beliefs and attitudes when recommending vaccines to the public, which could lead to improved vaccine coverage and reduced reemergence of vaccine-preventable diseases. This potential for positive change served as a source of hope and motivation in efforts to address vaccine hesitancy.

In this section, the topic's background is presented, along with the problem that initiated the study, the study's purpose, the research questions used to examine the phenomenon, and the study's nature. Section 1 also includes the literature search strategy,

the theoretical framework supporting the study, a comprehensive literature review, key definitions, assumptions, the study's scope, its limitations, and the study's overall significance.

Background

Vaccine hesitancy, a long-standing issue, took on new urgency during the COVID-19 pandemic. The unexpected emergence of vaccine hesitancy among healthcare professionals, particularly pharmacists, raised grave concerns about its potentially devastating impact on public health (Verger & Dubé, 2020). The literature on the topic was explored, and a gap was identified that this research sought to address. The potential impact of this research is significant, as vaccine-hesitant pharmacists are less likely to recommend vaccination. However, findings in the literature were mixed regarding whether vaccine-hesitant pharmacists continued to recommend vaccines.

One study concluded that vaccine hesitancy among pharmacists could negatively affect vaccination rates, as it was conducted early in the pandemic (Dinmohamadi et al., 2022). In contrast, other research found that pharmacists would recommend vaccines when it was part of their professional responsibilities, even if they personally experienced vaccine hesitancy (Terrie & Pharm, n.d.). Additionally, Robitaille et al. (2023) concluded that understanding how pharmacists' attitudes and beliefs influenced their interactions with the public was instrumental in addressing the issue and increasing pharmacist engagement in the vaccination process.

Pharmacists were frontline healthcare professionals tasked with disseminating vaccine information and administering vaccines, and vaccine hesitancy affected how this

information was conveyed. Based on the literature, further research was needed to determine whether vaccine-hesitant pharmacists could still effectively recommend vaccines to their patients (Robataille et al., 2023). This need for additional research underscored the importance of collective efforts to address vaccine hesitancy within this population, and the researcher's involvement was a critical component of that effort.

Problem Statement

Further research was needed to determine where pharmacists stood along the spectrum of COVID-19 vaccine acceptance, as this distinction carried significant implications for public health practice. The issue prompting this inquiry was the recognition that disasters, such as pandemics, can disrupt healthcare systems and adversely affect both population health and professionals' ability to function as usual. Although pharmacists were prepared to administer the COVID-19 vaccine during the pandemic, evidence suggests that some hesitated to receive it themselves (Dinmohamadi et al., 2022). The disconnect between professional responsibility and personal decision-making raised important questions about how hesitancy might influence pharmacists' confidence in advising patients about vaccination.

The need to examine this dynamic was particularly urgent in rural America. Carpenter et al. (2022) reported that although pharmacies in rural areas were prepared to distribute the COVID-19 vaccine, approximately 28% of pharmacists responsible for administering it were hesitant to receive it. Carpenter et al. (2023) further attributed this hesitancy to contextual factors prevalent in the South, including political solidarity, cultural skepticism toward government health interventions, historical mistrust of

healthcare systems, and the widespread dissemination of misinformation. These findings are especially concerning, given that lower regional vaccination rates reflect a broader reluctance extending beyond the public to healthcare professionals themselves. As Carpenter et al. (2023) noted, pharmacists' hesitancy may create a ripple effect, undermining public trust in the vaccine rollout and potentially reducing community-level uptake.

Temporal patterns in vaccine acceptance also highlight the complexity of pharmacists' decision-making. Jacobs et al. (2021) found that pharmacists' willingness to receive the COVID-19 vaccine prior to Emergency Use Authorization (EUA) varied over time. Initially, 67% reported willingness to be vaccinated within the first year of approval, increasing to 78% after one year. However, their readiness to recommend the vaccine to others was slightly lower during the early period, with 63% willing to endorse it within the first year, rising to 81% after a year (Jacobs et al., 2021). These discrepancies suggest that pharmacists may have exercised caution both in personally receiving and recommending a newly developed vaccine, particularly given concerns about the rapid development timeline and limited long-term safety data. Importantly, Jacobs et al. observed that as additional clinical data became available and safety was more widely demonstrated, pharmacists' confidence in both receiving and recommending the vaccine increased.

Given pharmacists' role as highly accessible frontline healthcare professionals, their hesitancy carries substantial public health implications. Achieving herd immunity against COVID-19 has been challenging, and ongoing vaccine hesitancy among

healthcare professionals—including pharmacists—poses an additional barrier (Jacobs et al., 2021). Even with widespread vaccine availability, professional uncertainty may hinder efforts to achieve sufficient vaccination coverage to prevent widespread transmission. Moreover, despite their pivotal role in administering COVID-19 vaccines, evidence indicates that many pharmacists hesitated to receive them themselves (Jacobs et al., 2021), potentially undermining the credibility and effectiveness of vaccination campaigns.

Taken together, these findings underscore the importance of understanding how pharmacists' vaccine hesitancy affects their ability to advise the public, particularly in underserved and rural communities. Identifying strategies to mitigate the impact of professional hesitancy is essential for strengthening vaccination efforts, restoring public trust, and improving public health outcomes.

The research was unclear on whether vaccine-hesitant pharmacists would consistently recommend vaccines. However, it was generally understood that pharmacists may be less likely to recommend vaccines to others if they are hesitant about vaccines. The research suggests that vaccine hesitancy among pharmacists may influence their likelihood to recommend vaccines, but further studies are needed, particularly given that the initial research was conducted early in the pandemic. Other studies have shown that pharmacists would still recommend the vaccine as part of their job, even if they were personally hesitant (Terrie & Pharm, n.d.). Robitaille et al. (2023) found that understanding pharmacists' attitudes and beliefs was crucial for understanding their interactions with the public and for increasing their involvement in the vaccination

process. Similarly, Yang and Son (2023) concluded that pharmacists' personal views on vaccines could significantly influence how they recommend them to the public. This research was crucial because it could provide insights into the impact of vaccine hesitancy on pharmacists' professional behavior, thereby informing strategies to improve vaccination campaigns and public health outcomes.

Purpose of the Study

This qualitative study used a phenomenological approach to explore the attitudes, beliefs, and responses of pharmacists who received the COVID-19 vaccine and how these influenced their ability to engage the public in vaccination discussions. The study aimed to explore and understand pharmacists' lived experiences and perspectives on the COVID-19 vaccine using a qualitative, phenomenological approach. By delving into pharmacists' attitudes, beliefs, and resistance or acceptance toward the vaccine, the study sought to uncover the underlying reasons for their stance on vaccination. This exploration goes beyond mere statistical analysis, aiming to capture pharmacists' nuanced, subjective experiences of behavior. The potential impact of these findings on public health was significant, as it could inform strategies to improve vaccination campaigns and, ultimately, public health outcomes.

The study aimed to shed light on how pharmacists' feelings and beliefs about the COVID-19 vaccine may influence their ability to engage with and advise the public effectively on vaccination matters. The research could identify potential barriers to effective communication and vaccine advocacy by understanding these personal attitudes

and how they shape patient interactions. This deeper insight could also inform strategies to enhance their role as trusted healthcare advisors in vaccination campaigns.

The study aimed to understand the complex relationship between pharmacists' vaccine-related attitudes and their professional responsibilities in guiding public health decisions, thereby contributing to more effective public health interventions and education strategies.

The phenomenon this study explored was the influence of pharmacists' attitudes and beliefs toward the COVID-19 vaccine on their ability to engage the public in vaccination. This phenomenon encompasses several key aspects:

Vaccine Hesitancy Among Pharmacists

The study examines why some pharmacists may hesitate to receive the COVID-19 vaccine. This could be due to personal beliefs, concerns about vaccine safety, perceived risks, or mistrust in the information provided about the vaccine. Understanding these reasons was crucial because pharmacists are considered trusted healthcare professionals, and their hesitancy could affect their professional conduct.

Impact on Professional Role

Pharmacists play a critical role in public health by providing information, guidance, and vaccination recommendations. If pharmacists are hesitant or resistant to receiving the COVID-19 vaccine, it may influence how they discuss it with patients. This could lead to less proactive advocacy for vaccination, more cautious or neutral communication, or even public.

Communication and Public Engagement

The phenomenon also involves how pharmacists' personal beliefs and attitudes affect their communication strategies with the public. This includes how confidently and convincingly they recommend the COVID-19 vaccine, as well as how they handle patient questions or concerns. A pharmacist's stance could shape the dialogue around vaccination, potentially impacting public perception and vaccine uptake.

Trust and Credibility

The study explored how pharmacists' attitudes towards the vaccine might influence their credibility and trustworthiness in the eyes of the public. If pharmacists are perceived as hesitant, it could undermine public confidence in vaccination campaigns. Conversely, pharmacists who confidently support and recommend the vaccine could bolster public trust and encourage vaccine uptake.

Broader Implications for Public Health

By understanding this phenomenon, the study aims to provide insights into how to support pharmacists as vaccination advocates, address their concerns and hesitations, and ensure they can effectively engage with the public. This, in turn, could have broader implications for public health efforts to increase vaccination rates for all vaccines and manage public health crises.

In summary, the phenomenon centers on the interplay between pharmacists' personal views on the COVID-19 vaccine and their professional duty to engage with and advise the public on vaccinations, underscoring the importance of aligning personal beliefs with public health responsibilities.

The field-based products resulting from this study hold significant value for various stakeholders in the following ways:

- ***Policymakers:*** The study's findings could inform policies to enhance vaccine advocacy among healthcare professionals, including pharmacists. Understanding the factors contributing to vaccine hesitancy among pharmacists helps policymakers design targeted interventions, training programs, and guidelines that address these concerns, ultimately leading to more effective vaccination campaigns and better public health outcomes.
- ***Public health practitioners:*** For public health practitioners, the insights gained from this study provide a deeper understanding of the barriers and facilitators to vaccine advocacy among pharmacists. This knowledge could guide the development of tailored communication strategies and educational programs to help pharmacists confidently promote vaccinations, thereby increasing vaccination rates in communities.
- ***Target population (pharmacists and the public):*** The study offers pharmacists a framework for reflecting on their attitudes and beliefs about vaccines, helping them understand how these attitudes and beliefs may impact their professional roles. It also equips them with the necessary tools and knowledge to effectively engage with the public on vaccination issues. For the public, this means receiving more consistent and supportive guidance from trusted healthcare providers, which could increase vaccine confidence and uptake, ultimately contributing to better community health.

The field-based products generated by this study provide meaningful insights and practical tools to inform multiple stakeholder groups. For policymakers, these products offer evidence-based perspectives and targeted policies to strengthen pharmacist engagement in vaccination efforts and improve public health communication strategies. Public health practitioners benefit from actionable recommendations and practice-oriented resources that could be integrated into training, outreach, and intervention programs to address vaccine hesitancy within the pharmacy workforce. For the target population—pharmacists—the study’s outputs highlight the challenges and facilitators they encounter in real-world settings, offering relevant strategies to enhance their confidence, effectiveness, and professional capacity when advising patients on vaccinations. Collectively, these products contribute to improving vaccination uptake and enhancing the overall quality of public health practice.

Research Questions

Research Question 1: What are the lived experiences of pharmacists that make them vaccine-hesitant?

Research Question 2: What are pharmacists’ perceived severity of the COVID-19 vaccine side effects?

Research Question 3: Do pharmacists’ beliefs and attitudes about the COVID-19 vaccine translate into behaviors when interacting with the public?

Nature of the Study

A descriptive phenomenological research design was employed to address the research questions in this qualitative study. Descriptive phenomenology, rooted in the

work of Edmund Husserl, sought to capture the essence of individuals' lived experiences as they perceive and describe them without preconceived theories or interpretations (Creswell & Poth, 2018). In this case, the phenomenon being studied was vaccine hesitancy among pharmacists. The goal was to gain an in-depth understanding of how pharmacists, particularly in rural areas in the South, experience and interpret their vaccine hesitancy and how this affected their professional roles in advising the public. The study explored the meanings and commonalities of these lived experiences through in-depth interviews and reflective practices.

The phenomenological approach was particularly suited for this study because it explores how pharmacists personally experience and perceive vaccine hesitancy, including their attitudes, beliefs, and feelings about receiving the COVID-19 vaccine. This approach emphasizes capturing the participants' subjective experiences, thereby providing rich, detailed insights into how they make sense of their vaccine hesitancy and how it affected their professional practice and interactions with the public. Using this method, the research focused on understanding the essence of the pharmacists' experiences from their viewpoints rather than imposing preconceived notions or hypotheses.

In phenomenological research, the viewpoint is centered on the participants themselves. This means that in this study, I gathered detailed, first-person accounts from pharmacists about their thoughts and feelings regarding the COVID-19 vaccine. These accounts were analyzed to identify common themes and patterns, which helped to illuminate the core of the phenomenon being studied. By focusing on participants'

experiences, the study could uncover how their views and feelings about the vaccine may influence their professional behaviors and attitudes toward vaccination advocacy. The researcher's role in understanding and interpreting these findings was crucial to the success of this research.

The aim of phenomenology is to describe rather than explain or analyze lived experiences. The goal in this study was to provide a vivid, accurate depiction of what it was like for pharmacists to experience vaccine hesitancy. This involved delving into the nuanced and complex emotions, thoughts, and social contexts that shape their experiences. I sought to understand how pharmacists' lived experiences of vaccine hesitancy shape their perceptions and actions, including how they engage with patients and the public about vaccines. By describing these experiences, the study could provide valuable insights into the factors contributing to vaccine hesitancy among healthcare professionals and how these factors impact public health communication.

Phenomenology was the best method for this qualitative study because it allows for a deep exploration of vaccine hesitancy from the perspective of those directly experiencing pharmacists. By focusing on their lived experiences, the research could capture how vaccine hesitancy manifests in their personal and professional lives. This approach provides a rich understanding of the reasons for vaccine hesitancy and how they affect pharmacists' ability to fulfill their roles as trusted healthcare advisors. Additionally, phenomenology could reveal how pharmacists' experiences with vaccine hesitancy shape their worldview, including their perceptions of their professional responsibilities and interactions with the public.

Through a phenomenological study, this research examines how pharmacists' experiences with vaccine hesitancy shape their behaviors, particularly in vaccine advocacy and public engagement. By examining their lived experiences, the study explored how these experiences shape their attitudes and behaviors toward vaccination, both in their personal decisions and professional interactions. This approach also sheds light on how pharmacists' perceptions of vaccine hesitancy influence their broader worldview, including their views on public health, trust in scientific evidence, and their role in promoting vaccination within their communities.

In summary, a phenomenological qualitative study was ideally suited to explore pharmacists' complex lived experiences with vaccine hesitancy. Focusing on the participants' subjective experiences provides a rich, nuanced understanding of how vaccine hesitancy affected pharmacists' professional roles and interactions with the public. This understanding was essential for developing effective strategies to support pharmacists in their role as vaccine advocates and enhance public trust in vaccination efforts.

This study's methodology involves collecting qualitative data from pharmacists to explore their attitudes, beliefs, and resistance or acceptance of the COVID-19 vaccine, and how these views influence their engagement with the public.

Data Collection

Participants

For this study, I recruited pharmacists from various settings, such as community pharmacies, hospitals, and other healthcare facilities. The selection process prioritized

diverse participants to ensure a comprehensive range of perspectives was captured, thereby enhancing the study's inclusivity and thoroughness.

Method

Data were collected through in-depth, audio-recorded, semi-structured interviews, allowing participants to share their experiences and views on the COVID-19 vaccine. Using open-ended questions encouraged detailed responses, enriching the data collection process.

Data Analysis

Approach

Braun and Clarke's (2006) method was used for the thematic analysis in this study. Their flexible, accessible approach to thematic analysis allowed me to identify, analyze systematically, and report patterns (themes) within the data. This method involves a six-phase process: familiarization with the data, generating initial codes, searching for themes, reviewing themes, defining and naming themes, and producing the final report. Braun and Clarke's approach was valuable in qualitative research, as it emphasizes the researcher's active role in interpreting data while maintaining a strong connection to participants' narratives.

Steps

Braun and Clarke's (2006) thematic analysis method involves six key steps, each designed to guide the researcher through systematically analyzing qualitative data:

1. **Familiarization with the data:** I immersed myself in the data by reading and re-reading transcripts, interview notes, and/or other textual material. This step

includes actively listening to and engaging with the content, noting initial emerging ideas and patterns.

2. **Generating initial codes:** After familiarization, I began systematically coding the data's exciting features. This step involves labeling text sections with short phrases that capture significant points or meanings. These codes are the building blocks of potential themes.
3. **Searching for themes:** I organized the codes into broader themes that capture significant patterns in the data. This step involves sorting and combining codes into potential themes, considering how different codes may relate to one another to form overarching concepts.
4. **Reviewing themes:** In this step, I reviewed and refined the themes. They evaluated whether the themes accurately represent the data and whether there was sufficient evidence to support each theme. Themes that are too broad may be split, while others might be combined or discarded.
5. **Defining and naming themes:** After refining the themes, I clearly defined and named each one. This step involves identifying the essence of each theme and ensuring that it was distinct and specific. Each theme was then described in detail, with subthemes if applicable.
6. **Producing the report:** In the final step, the researcher writes the analysis, weaving the themes into a coherent, meaningful story about the data. This report explains each theme, supported by quotes from the participants' narratives.

Outcome

The use of Braun and Clarke's (2006) thematic analysis method yielded a set of clearly defined themes that capture the essence of participants' experiences with vaccine hesitancy. These themes represented recurring patterns of meaning within the data and provide rich, detailed insights into how pharmacists perceive and navigate their hesitancy toward vaccines. The thematic analysis enables an in-depth understanding of individual experiences and the identification of broader, shared concerns and interpretations among participants. Ultimately, the outcome was a nuanced and comprehensive account of the factors influencing pharmacists' vaccine hesitancy, particularly in rural areas, and of how this hesitancy impacts their professional roles and interactions with the public.

Literature Review Search Strategy

During the literature review, I met with the Walden Library staff. Their invaluable assistance in working through different search terms was instrumental in finding a comprehensive review. The Walden University Library's extensive collection of credible sources, including the Health Sciences Research Databases, Google Scholar, the Centers for Disease Control and Prevention (CDC) website, and the World Health Organization (WHO) website, was crucial in providing access to the necessary literature for this research. The peer-reviewed articles used for this literature review were retrieved from the Walden University Library utilizing the Health Sciences Research Databases.

The Walden University Library Health Sciences Research Databases search included multiple databases such as APA PsycINFO, CINAHL & MEDLINE Combined Search, CINAHL Plus with Full Text, Embase, MEDLINE with Full Text, ProQuest

Health & Medical Collection, ProQuest Health and Medical Collection, ProQuest Nursing and Allied Health Source, PubMed, and TRIP Database. APA PsycInfo was the most extensive resource for scholarly, peer-reviewed literature in the behavioral sciences and mental health. It also includes book chapters, books, dissertations, and all content from APA Psyc Articles. CINAHL stands for the Cumulative Index to Allied Health and Nursing Literature. CINAHL & MEDLINE Combined search includes peer-reviewed articles, reports of evidence-based practice, case studies, systematic reviews, and more. CINAHL Plus, with full-text, was one of the largest databases of journals and ebooks related to applied health and nursing. Embase covers biomedical literature worldwide, including MEDLINE and many conference abstracts and EU journals that are not found elsewhere. Particularly strong in drug and pharmacology information. With its full-text database, MEDLINE provides medical information on infectious diseases, medicine, clinical sciences, the healthcare system, and more (Walden University Library, 2024).

The ProQuest Health and Medical collection and the ProQuest Nursing and Allied Health Source are similar. The Health and Medical collection includes additional titles on health administration and consumer health. In contrast, the Nursing and Allied Health Source includes abstracts and indexing covering nursing, allied health, alternative and complementary medicine, and related topics (Walden University Library, 2024). PubMed includes the MEDLINE database, in-process citations, “Ahead of Print” items, NIH-funded research projects, books from the NCBI Bookshelf, and selected items from PubMed Central. The TRIP Database (Turning Research into Practice) was a freely accessible database that included evidence-based synopses, clinical answers, systematic

reviews, guidelines, and tools that could be used with something like Google Scholar to access the full text (Walden University Library, 2024).

I used the following keywords to search credible universities and online government databases: *vaccine hesitancy*, *COVID-19 pandemic*, *COVID-19 vaccine*, *pharmacists*, *vaccine hesitancy or vaccine refusal*, *interactions*, *customer service*, *health belief model*, *attitudes/beliefs/perceptions*, *vaccine or vaccination*, and *COVID-19 vaccine hesitancy in pharmacists*. The keywords were searched collectively and individually.

The literature selected for this review adhered to specific inclusion and exclusion criteria. Sources were primarily published between 2019 and 2024, with a few exceptions for articles deemed essential to the study. All selected literature was relevant to the research questions and hypotheses. Peer-reviewed journal articles published over 5 years ago were generally excluded unless they were crucial to the research or provided significant insights. All included sources were peer-reviewed to ensure credibility.

Theoretical Framework

The study's theoretical foundation was the health belief model (HBM), developed by Rosenstock in 1966 (Rosenstock, 1974) and continuously refined since. This ongoing evolution ensures that the model remains relevant and practical in understanding health behaviors. The HBM is not just a theoretical construct but also a practical tool for understanding and predicting health behaviors by examining individuals' attitudes and beliefs. It suggests that a person's health-related behavior is influenced by their perception of several key factors:

Perceived Susceptibility

Individuals must believe they are at risk of a particular health problem (Rosenstock, 1974). In this study, pharmacists' perceptions of their risk of contracting COVID-19 influenced their attitudes toward vaccination (Wong et al., 2020). This component concerns pharmacists' perceptions of their risk of contracting COVID-19. If pharmacists believe they are susceptible to the virus, they may be more inclined to get vaccinated and advocate for vaccination. The study explores whether pharmacists' vulnerability affected their decision to receive the vaccine and their confidence in recommending it to others (Rosenstock, 1974; Wong et al., 2020).

Perceived Severity

The belief in the seriousness of the health problem and its potential consequences influences behavior (Rosenstock, 1974). Pharmacists who perceive COVID-19 as a serious threat may be more likely to get vaccinated. This aspect involves pharmacists' beliefs about the seriousness of COVID-19 and its potential impact on their own and others' health. If pharmacists perceive the disease as severe, they might be more motivated to get vaccinated and encourage others to do so. The study aims to understand how these perceptions of severity influence pharmacists' attitudes toward the COVID-19 vaccine (Janz & Becker, 1984; Rosenstock et al., 1988).

Perceived Benefits

The COVID-19 vaccine belief holds that taking a specific action, such as receiving the COVID-19 vaccine, reduces the risk or severity of the disease (Rosenstock, 1974). This study examines pharmacists' perceptions of the benefits of vaccination in

protecting themselves and others. The study investigated whether pharmacists believe that vaccination and vaccination advocacy effectively prevent COVID-19. If pharmacists recognize the vaccine's benefits, they are more likely to endorse it to their patients. This component was crucial in understanding how perceived vaccine effectiveness influences pharmacists' willingness to engage in vaccination advocacy (Champion & Skinner, 2008; Wong et al., 2020).

Perceived Barriers

Perceived obstacles to the recommended action could deter individuals from engaging in health-promoting behaviors (Rosenstock, 1974). Barriers might include concerns about vaccine safety and side effects, as well as pharmacists' mistrust of vaccine efficacy. The study's key focus was on identifying barriers to vaccination. These barriers could include concerns about vaccine safety, fear of side effects, or doubts about the vaccine's efficacy. By exploring these barriers, the study could highlight the factors that lead to vaccine hesitancy among pharmacists and how these barriers might affect their professional responsibilities (Orji et al., 2012; Rosenstock, 1974).

Cues to Action

External events or information could trigger decision-making, prompting individuals to act (Rosenstock, 1974). For pharmacists, cues could include workplace policies, public health campaigns, or personal experiences with COVID-19. The study examines external factors or triggers that motivate pharmacists to consider vaccinating or to advocate vaccination. These cues could include public health messages, recommendations from health authorities, or observing the impact of COVID-19 in their

community. Understanding these cues could help identify effective strategies to encourage pharmacists to take up vaccines (Champion & Skinner, 2008; Wong et al., 2020).

Self-Efficacy

The belief in one's ability to take the recommended action influences behavior (Rosenstock et al., 1988). In this context, pharmacists' confidence in making informed vaccine choices and recommending vaccination to others was explored. This component involves pharmacists' confidence in their ability to get vaccinated and in effectively communicating the importance of vaccination to the public. The study assessed pharmacists' confidence as vaccine advocates and whether vaccine hesitancy affected their perceived self-efficacy. High self-efficacy could lead to more proactive vaccination behavior and advocacy (Rosenstock et al., 1988; Yang, 2015).

The HBM was directly relevant to this study because it provides a theoretical framework to understand how pharmacists' attitudes, beliefs, and perceptions regarding the COVID-19 vaccine might influence their vaccination behavior and professional conduct when engaging with the public about vaccination (Champion & Skinner, 2008; Rosenstock et al., 1988).

Overall, the HBM helped frame the study's exploration of the complex interplay between pharmacists' beliefs about the COVID-19 vaccine and their professional responsibilities. By examining these beliefs and how they translate into action, the study provided insights into addressing vaccine hesitancy among pharmacists and enhancing their role in public health promotion. Understanding these dynamics could lead to better

strategies to support pharmacists in overcoming hesitancy, thereby improving vaccine advocacy and public trust in vaccination efforts.

Literature Review Related to Key Concepts

COVID-19

Virology

COVID-19 was caused by the novel coronavirus SARS-CoV-2 (Sheposh, 2023). The SAR virus stands for novel severe acute respiratory syndrome coronavirus 2, and the official name of the disease caused by this specific virus was coronavirus 2019, or COVID-19 for short. When COVID-19 was first sequenced, it was determined that, although it was a coronavirus, it did not share standard features with other coronaviruses, making it novel (Dhama et al., 2020). Coronaviruses are a large family of viruses that could cause diseases ranging from the common cold to the more deadly COVID-19 (Sheposh, 2023). COVID-19 was an enveloped single-stranded RNA virus (Halaji et al., 2021). Coronaviruses are classified by their single-stranded RNA, which is topped by a spikey crown of proteins. They have around 30,000 types of RNA, which allows them to enter cells and hijack them to replicate and mutate (Halaji et al., 2021). There is also a specific part of the virus called the spike protein, which, when it binds, could disrupt normal cell function and make it more infectious than other viruses in the family tree (Rauf et al., 2020). This type of virus is more infectious and harmful because it uses the spike, also called the crown of the protein, to penetrate the cell nucleus more deeply. This penetration leads to a more harmful virus. How the virus infects the cell determines what could happen (Zhou et al., 2020).

Many factors could contribute to the spread of COVID-19. Whether the person is at higher risk due to environmental, psychological, or physical factors plays a big part in the transmission of the disease. The virology at the time of infection could include the number of viruses in the infected sample, the site of infection, and the presence of a viral receptor (Halaji et al., 2021). There is another risk factor that one may overlook. There was a significant nosocomial transmission rate, with the greatest risk from dentists. Nosocomial transmission occurs in a hospital or healthcare setting. Examples of this, in addition to COVID-19, include pneumonia and urinary tract infections (Halaji et al., 2021). These infections occur because the patient is exposed to the virus at a hospital or health care facility through one or more known transmission routes. To help prevent the spread of disease, healthcare practitioners and hospital visitors should wash their hands regularly and wear surgical masks. To prevent the spread, measures must be implemented in healthcare facilities and the general population (WHO, 2020).

Etiology

The COVID-19 pandemic began in December 2019 in Wuhan, China. The public health community believes the disease originated as a zoonotic infection, first in bats and later in humans (Dhama et al., 2020). Although the disease began in China at the end of 2019, it quickly spread to more than 180 countries and was declared a pandemic by the WHO in March 2020. The COVID-19 disease ravaged the world for over three years and caused more than 770 million infections worldwide, with more than six million deaths over the three-and-a-half-year period of the pandemic (Sheposh, 2023). The disease's dominant mode of transmission was person-to-person, usually through infected droplets

from coughing, sneezing, and even talking (Halaji et al., 2021). It was determined that maintaining at least 6 feet of distance from other people could help minimize the spread of the disease. The disease could also be spread by touching contaminated mucous to the nose, mouth, or eyes. Therefore, ensuring people follow strict hand-washing measures to kill the virus was necessary. The infection rate varied from person to person, depending on factors such as the severity of the infection. The variation depended on environmental, behavioral, and physical factors, as well as virology at the time of infection (Halaji et al., 2021). Ongoing research was underway to determine the actual cause of the disease. However, the infection started there and then spread.

Epidemiology

Although the COVID-19 pandemic has ended, prevalence and incidence rates remain high in the United States. The WHO declared the global pandemic ended on May 5, 2023, and the United States Health and Human Services declared an end on May 11, 2023 (CDC, 2023). Various factors determine whether the disease transitions away from a pandemic-like state (WHO, 2021). The factors determining whether a pandemic could be declared over are multifaceted. The most crucial factor was whether the risk to human life remains high. Overall, the factors are the population's level of immunity, vaccination rates, and disease management. The COVID-19 factor was to assess the virulence of the current variant; however, even though the variant at the time was an Omicron Sub-lineage, it was more manageable than previous variants. The decision ultimately came down to the fact that COVID-19 hospitalizations and weekly infection rates were down.

The decrease in infection rates significantly contributed to the end of the pandemic (WHO, 2021).

The declining positivity rate has contributed to the decision to end the COVID-19 pandemic emergency. Throughout the pandemic, the number of people who tested positive in the United States has been 110,213,843 (CDC, 2023). From December 23, 2023, to January 2, 2024, the positivity rate was 12.7%. In the two weeks preceding January 2, 2024, the positivity rate indicates a slight increase during the holiday week. The positivity rate was not the only indicator of disease control (CDC, 2023).

Emergency room visits were another key indicator of whether the United States was moving away from a pandemic. Most people go to an emergency room only when they feel sick, underscoring the severity of the infection. From December 23, 2023, to January 2, 2024, there were 29,059 emergency room visits due to COVID-19 in the United States, representing a 2.5% rate of ER visits (CDC, 2023). Emergency room visits throughout the pandemic have ebbed and flowed, with high volumes at some points and low at others. The trend in emergency room visits from the chart appears to be on the downslope of the curve. Although emergency room visits were essential, hospitalization may be a more important indicator of illness severity (CDC, 2023).

Hospitalizations were a crucial indicator of how well the public health community controls the spread of the coronavirus. From March 2020 until January 2, 2024, there were 6,622,268 hospitalizations (CDC, 2023). The hospitalization rate for the week preceding Christmas grew by 16.7%. Although the percentage of hospitalizations appears high, it was on the lower end, suggesting the disease was no longer a pandemic. Although

the hospitalization rate was an important indicator, the death rate was a more essential indicator.

Deaths due to COVID-19 are the most critical indicator of whether the disease was still a pandemic. The disease's most significant effects were determining whether it was a global infection and its mortality rate (WHO, 2023). From December 23, 2023, to January 2, 2024, there were 163,040 deaths due to COVID-19 in the United States. For the week preceding Christmas, the death rate grew by 10% (CDC, 2023). The percentage of deaths due to COVID-19 from December 23, 2023, to January 2, 2024, was 3.3% (CDC, 2023). This equates to 569 deaths for that period (CDC, 2023). The percentage of deaths due to COVID-19 was low, indicating that the pandemic was, in fact, over. The indicators were essential in determining whether the pandemic emergency could be officially closed. Based on the current information, although COVID-19 still exists, it poses a manageable threat as it once did (CDC, 2023).

Prevention Efforts

The President of the United States introduced the Stop the Spread measures for COVID-19 on March 16, 2020. Social distancing recommendations were the first to be recommended. Regarding stopping the spread, the United States worked to determine which protective measures, such as personal protective equipment, would help prevent COVID-19 transmission from person to person. The CDC's knowledge about COVID-19 grew continuously throughout the pandemic and evolved into recommendations to help stop the virus from spreading (CDC, 2023). Masks and a complete shutdown were implemented at the beginning of the pandemic to prevent the spread of the disease from

person to person (CDC, 2022). Staying six feet apart and utilizing masks were implemented to prevent the spread of the disease from person to person. The shutdown was implemented to curb the spread, especially before vaccines for the disease became available. Although preventing the spread through these measures was necessary, vaccines were essential to combat COVID-19.

Vaccines were a powerful tool for developing immunity to specific diseases. During the early stages of the pandemic, the WHO called on the healthcare and pharmaceutical sectors to develop an effective vaccine to combat the disease (Mahmood et al., 2022). During June and July 2020, there were 139 vaccine candidates to work through. In the United States, three vaccines were made available in the first year of the pandemic. There were several methods for creating a vaccine: the more traditional live attenuated vaccines, inactivated vaccines, and viral vector vaccines. The microbe-based approach could be broken into three methods: live attenuated vaccines, inactivated vaccines, and viral vector vaccines (WHO, 2023). There was also the subunit approach and the genetic material approach. In the subunit approach, they use a small piece of the virus, such as a protein or sugar, that elicits an immune response. The method of using genetic material involves using a genetic blueprint, such as RNA or DNA, to enable the host body to produce a specific protein and mount an immune response. Subunit and genetic vaccines were newer approaches to vaccine development, especially for emerging viruses. Although there are different vaccine classifications, the COVID-19 vaccines use only a few (Mahmood et al., 2022).

COVID-19 vaccine development had to happen quickly, and each manufacturer used similar yet different methods: the Johnson & Johnson vaccine, the Pfizer and Moderna vaccines, and a viral vector vaccine. The Pfizer and Moderna vaccines were mRNA vaccines developed by Pfizer and Moderna (CDC, 2022). The Johnson and Johnson vaccine has expired and is no longer available in the United States. A viral vector vaccine uses a modified version of a different virus to train the immune system to recognize the virus it targets. The mRNA vaccines were constructed in a laboratory by encoding mRNA that instructs cells to produce a protein or part of a protein to elicit an immune response (Mahmood et al., 2022). The mRNA vaccines use genetic material to make them and were among the first of their kind. Although the technology has been developed in the past, these were among the first vaccines to use that classification type. Vaccines were one of the best ways to fight against a disease like COVID-19.

Immunization

While the COVID-19 vaccine has served as a highly visible and contemporary example of vaccine hesitancy, limiting the discussion to this single vaccine risks overlooking broader patterns that influence attitudes toward immunization. Therefore, expanding the focus from COVID-19 vaccination to immunizations in general allows for a more comprehensive examination of the underlying beliefs, systemic factors, and communication challenges that shape vaccine decision-making across contexts. This broader lens not only situates COVID-19 within the continuum of public health immunization efforts but also enhances the analysis's applicability and relevance beyond a single public health emergency. The state of immunization for chronic and infectious

diseases in the United States has steeply declined. The Vaccine Advisory Committee of the CDC and the American Academy of Pediatrics will recommend who should be vaccinated and when (Morris, 2021). The ACIP issues a recommended vaccine schedule. However, each state could require less, as it was a recommendation rather than a mandate to attend school (Morris, 2021). For that reason, vaccination is a state determination; vaccination coverage varies from state to state. Exemptions from vaccination vary by state (Morris, 2021). Although U.S. vaccination programs have done a great job of eliminating vaccine-preventable diseases such as measles, polio, and rubella, there remains a nationwide gap in vaccine coverage (Stokley et al., 2021). There is a severe threat to vaccine coverage: vaccine hesitancy, a growing trend in the United States. The WHO has deemed vaccine hesitancy a top-ten threat to public health worldwide (Ali et al., 2022). Vaccine hesitancy means that people either delay vaccination when it is available or do not receive it because of religious beliefs, misinformation about vaccine efficacy, or politically motivated objections (Stokley et al., 2021).

Public Health Efforts in Combating Vaccine Hesitancy

The public health effort to combat vaccine hesitancy has been growing in strength but has had some setbacks. Knowledge based on science is one of the first lines of defense, so the CDC monitors vaccine coverage throughout the United States (Ghaswalla et al., 2021). By monitoring vaccine coverage, the CDC could determine which vaccine-preventable diseases may reemerge and plan to address vaccine hesitancy. As vaccine-preventable diseases start, messaging must be improved to combat vaccine hesitancy. Knowledge was power, allowing people to make informed decisions about their health.

Vaccine Hesitancy in Routine vs. Nonroutine Vaccines

Influenza vaccinations were crucial for reducing the burden on the healthcare system year-round. The emergency room was found to be an essential part of the vaccination pipeline, especially for underserved or disparate populations (Parrish et al., 2022). Some end up in the emergency room. To combat vaccine hesitancy, having the nurse conduct an influenza vaccine screening at intake helps reduce the number of unvaccinated people. Making sure the screening was equitable was also a part of the process, because Black patients were found to be less vaccinated than White patients (Parrish et al., 2022). Ensuring bias was removed from the process was imperative to combating vaccine hesitancy—the U.S. Health and Human Services created a program to help children get caught up on childhood vaccinations after a decline at the start of the COVID-19 pandemic (Deerin et al., 2022). The program was targeted at Native American health centers; only some adopted it, and others did not. Those who adopted it saw an increase in childhood vaccination rates, while those who did not saw a continued decline. When there was a monkeypox outbreak, the vaccinations were varied due to discrimination and bias in the healthcare system (Blackwell et al., 2023). Some vaccine hesitancy was due to discrimination in the population being served. As shown, different methods could help combat vaccine hesitancy, and there was no one-size-fits-all solution.

Public Health Efforts in Combating COVID-19

Although the broader discussion of immunizations provides essential context for understanding vaccine attitudes and behaviors, it is important to return specifically to COVID-19 to examine how these general principles manifested during an unprecedented

global public health crisis. Revisiting COVID-19 allows for a focused analysis of how established immunization frameworks, communication strategies, and behavioral determinants operated under conditions of heightened uncertainty, rapid scientific development, and widespread public scrutiny. By narrowing the lens once again, the discussion can more precisely evaluate the unique challenges and lessons emerging from the COVID-19 vaccination experience. Public Health science and practice were crucial in the fight against COVID-19. Public health organizations, such as the CDC, worked with local, state, and federal governments and healthcare providers to get the message out about the disease (Sodhi et al., 2023). Studies have shown that collaboration between primary care and public health organizations in vaccination programs dramatically increases their likelihood of success (Sodhi et al., 2023). Public health organizations could learn more about the communities they serve and which method would work best by coordinating with primary care during the planning phase of a vaccination rollout program. Collaboration between the healthcare sector and public health improves the effectiveness of programs and their implementation (Abdel-Qader et al., 2022). Vaccination programs during COVID-19 needed to be organized and rethought. Implementing such programs could use more than just the tried-and-true process; they need to develop new ways to reach the public.

Childhood vaccination rates declined, especially during the COVID-19 pandemic. According to the WHO and the United Nations Children's Fund (UNICEF), in 2020, around 25 million children missed some routine vaccinations, and around 17 million did not receive any vaccinations worldwide (Syed et al., 2023). For that reason, missed

vaccinations during the first year of the COVID-19 pandemic were such an issue that public health officials determined they had to get creative with their COVID-19 vaccination implementation. As part of the vaccination program implementation, especially in the United States, mobilizing and collaborating with faith-based organizations (FBOs) was a key part. FBOs combine a moral and social function with some religious beliefs (Syed et al., 2023). At the same time, these organizations were used before but were relied upon more heavily during the COVID-19 pandemic to unite underserved and disparate populations with public health organizations. Faith-based organizations were a way to reach a part of the public that may distrust the government or feel underserved by the healthcare system. During COVID-19, FBOs were crucial in helping combat the disease by increasing awareness of protective measures and promoting the vaccine. Increasing awareness among people trusted by the public goes a long way toward tackling COVID-19 vaccine hesitancy and supports the rollout of preventive measures.

Adverse Public Health Outcomes of COVID-19 Hesitancy

COVID-19 brought new versions of vaccine hesitancy to light. In the wake of the COVID-19 pandemic, a new group of vaccine-hesitant people started to show up. That group included healthcare professionals, including nurses, doctors, pharmacists, and dentists (Dinmohammadi et al., 2022). Studies have shown that the COVID-19 vaccine was safe and effective in combating COVID-19. However, some healthcare communities were vaccine-hesitant. Dinmohammadi et al. (2022) found that the factors contributing to vaccine hesitancy among healthcare workers differed from those of the general

population. The factors included age, gender, preserved COVID-19 severity, conspiracy theories, perceived personal susceptibility, health-related beliefs, and concerns about the vaccine's safety. Adverse events were another common reason for vaccine hesitancy (Azarpanah et al., 2021). When a medical issue arises from taking a medication or a vaccine, it was considered an adverse event. The adverse event could include getting another medical condition, such as a blood clot or seizures, that may or may not be caused by the medication or vaccine. Vaccine hesitancy could change over time and vary by vaccine. The lack of trust in the vaccine or vaccine process could also lead to vaccine hesitancy and adverse events following immunizations. During the COVID-19 pandemic, three vaccines obtained EUA from the Food and Drug Administration: Pfizer, Moderna, and Janssen. Of the three vaccines, the J&J vaccine was shown to possibly cause blood clots, leading to its pause on April 13th, which was lifted 10 days later (Salmon et al., 2022). This issue further fueled vaccine hesitancy, and people cited safety and efficacy concerns. When people believe the vaccine development process was rushed or the guidelines were not followed, they were more inclined to think the vaccine was unsafe and that they were at risk of adverse events following an immunization. The fear of adverse public health outcomes has become an influential factor in vaccine hesitancy (Salmon et al., 2022).

Vaccine Hesitancy's Impact on Public Health

Vaccines were the fundamental way Public Health combats disease outbreaks in the population. If the population was vaccine-hesitant, herd immunity of at least 80%, which was required to stop a disease from circulating in the population, cannot be

achieved (Azarpanah et al., 2021). Public Health strives to eliminate diseases preventable by vaccines, such as measles. Undervaccinated and unvaccinated people were driving up the number of cases of vaccine-preventable diseases (Kumar et al., 2016). Lack of confidence in vaccines worldwide has led to more vaccine hesitancy, allowing vaccine-preventable diseases, once thought to be eradicated, to reemerge. The WHO has determined vaccine hesitancy among the top ten public health issues worldwide (Kwok et al., 2021). The WHO has attributed vaccine hesitancy to three main areas: (a) lack of confidence in the vaccine or fear that they will become infected with the disease, (b) undervaluation of the need for the vaccine or not valuing it, and (c) difficulty in gaining access to the vaccine. Vaccine hesitancy was not a new phenomenon, but COVID-19 caused its prevalence to grow.

Vaccine hesitancy allows harmful diseases to affect the health of the population. Hesitancy toward vaccines has only grown since the 2009 influenza pandemic (Shallal et al., 2021). Vaccine hesitancy was an issue because it crosses many factors, and no one group has the exact reasoning behind their hesitancy. During the pandemic, it became apparent that there was still distrust and inequity in healthcare, which led many Black healthcare workers to express vaccine hesitancy toward the COVID-19 vaccine. (Lusk et al., 2022). When there were Black healthcare workers who would be assumed not to be vaccine-hesitant, there needs to be a question of why. The most likely answer lies in the past, where there was a fear that the past will repeat itself and that Black healthcare workers will become part of the testing even when they do not want to. Because of the Tuskegee Syphilis Experiment on Black Americans by the United States Public Health

Service (PHS) from 1932 to 1972, Black Americans were more skeptical about vaccinations, especially when they seem to be created quickly without a thorough review. (Smolin, 2012). The experiments were conducted on rural, impoverished African American males to determine the effects of untreated syphilis on them. The pain of the past has led the current population of African Americans to be skeptical of anything that seems like an experiment on the population. When patients have nurses who were the most trusted healthcare professionals but were vaccine-hesitant, it was difficult to reach the herd immunity level needed to stop the pandemic (Rich-Edwards et al., 2022).

Vaccine Hesitancy in the General Population

The Strategic Group of Experts (SAGE) defines vaccine hesitancy as the delay in acceptance or outright refusal of a vaccine, even when it was available (Azarpanah et al., 2021). The group defines vaccine hesitancy as having different reasons, depending on whom they talk to and which sub-population they belong to.

There were various reasons behind vaccine hesitancy in the general population and the vaccine in question. The researchers found that people who were vaccine-hesitant when it pertained to the COVID-19 vaccine had concerns about how the vaccine was stored, the adverse events associated with the vaccine, and finally, the effectiveness of the vaccine due to the perceived quickness of the vaccine development (Al-Metwali et al., 2021; Roy et al., 2022). The researchers found that vaccine hesitancy had a variable scale dependent on environmental factors (external), the factors related to the specific vaccine, and host-specific factors such as knowledge, education level, and experience (Kumar et al., 2016). Perceptions of vaccine-specific factors were crucial for understanding vaccine

hesitancy. In Latin American countries, societal polarization was a significant factor, underscoring the social dynamics that shape public health decisions (Faria et al., 2022). Societal polarization, which emerged during COVID-19, occurs when groups within society take firm stances on opposite sides of an issue. This means that people who were opposed to the vaccine felt strongly and pushed back against those administering it and those who supported vaccination. In Tennessee, researchers conducted a study of adults to assess vaccine hesitancy, particularly regarding COVID-19. They found that subgroups of the population were more vaccine-hesitant; this was especially true in people who were more moderate or conservative politically, a more marginalized group like Black Americans, and those who lived in more rural locations (Gatwood et al., 2021). Before COVID-19, many people were vaccine-hesitant. They did not understand the dangers of the diseases the vaccine was meant to prevent because they were no longer around. Another area that led to vaccine hesitancy in the past was the research that was later debunked on vaccines causing autism. The study shows that there was no single reason for vaccine hesitancy and that it depends on the vaccine itself. Vaccine hesitancy was a highly complex topic and could be based on many different factors.

Vaccine Hesitancy in Sub-Populations

Vaccine hesitancy could be broken down into different sub-populations. Arab Americans were a growing sub-population within the United States (Shallal et al., 2021). Among the African population, one significant factor in whether a person became vaccine-hesitant was the source of their vaccine information. They were more likely to become vaccine-hesitant if they received their information on social media, which was

rife with misinformation because it was based on people's opinions rather than scientific vetting. Those in Latin American countries have also been influenced by social media, especially those in a lower socioeconomic demographic or those with mental health issues (Faria et al., 2022). During COVID-19, they were vaccine-hesitant and did not trust the vaccine or the person recommending it; receiving the vaccine was inconvenient, or they did not believe it was valuable. Although the entire population in Latin American countries was at risk of becoming vaccine-hesitant, in all countries, people with mental health issues were at greater risk. People of Latin descent in the United States, especially men, hesitated to seek healthcare because they lacked insurance or the funds to pay for it (Weinstein et al., 2023). Factors that reduced vaccine hesitancy included being stress-free about money and the time between the EUA and vaccination (Salmon et al., 2022). Financial stress was a great predictor of vaccination status within this community. Researchers found that Orthodox Jewish communities, especially in New York City, were more skeptical of the vaccines because they had a storied history with city officials and often felt singled out or harassed, so they did not trust the officials about vaccines (Carmody et al., 2021). At the same time, researchers found that ultra-Orthodox Jews with low socioeconomic status in Israel had cut off contact with people outside their communities and were prone to disinformation, which was rampant during the pandemic (Shkalim Zemer et al., 2022). Even though COVID-19 hard hit these specific Jewish communities because they lived and worked in such close quarters, they were untrusting of the government, so they did not trust them to give them proper information on the COVID-19 vaccine (Carmody et al., 2021). Each sub-population has a different culture.

However, they share that they were slow to trust, especially the government. Vaccine hesitancy was never a one-size-fits-all problem or solution.

Vaccine Hesitancy Impacts on Non-Vaccine Hesitant People

Vaccine-hesitant people could have a significant effect on those who were not hesitant. During the COVID-19 pandemic, individual beliefs were a significant determinant of vaccine hesitancy or acceptance (Roy et al., 2021). Without healthcare providers influencing people, social groups, and social media, the effects would have been more significant, and social media would have had a greater impact. New vaccine-hesitant influencers emerged during the pandemic, such as healthcare professionals (Lin et al., 2021). Pharmacists who were hesitant about vaccines may still be more inclined to recommend vaccination if they perceive it as part of their professional responsibilities. Research has shown that healthcare providers, including pharmacists, often feel a duty to advocate for vaccinations, even if they have personal reservations. A study by Ozdemir et al. (2022) found that pharmacists who acknowledged the importance of their role in public health were more likely to endorse vaccination despite their hesitations. Moreover, the concept of professional responsibility could significantly influence healthcare providers' behavior. According to a review by Le et al. (2022), when pharmacists recognize their role in guiding patients toward informed health decisions, they may overcome personal doubts and actively promote vaccination. This sense of duty could motivate pharmacists to recommend vaccines based on evidence and public health guidelines, regardless of their personal feelings about immunization. Furthermore, the perception of being a trusted source of information was critical to pharmacists'

recommendations. As highlighted by Madhavan et al. (2001), patients often rely on pharmacists for vaccination advice. This relationship underscores the importance of pharmacists' professional integrity and commitment to patient care, which may lead them to prioritize patients' health needs over their own vaccine hesitancies. While personal vaccine hesitancy could influence pharmacists' behavior, their professional obligations and commitment to public health may still drive them to recommend vaccines, particularly when they recognize the importance of their role in ensuring community health.

Pharmacists provide fact sheets about the vaccine to help inform their patients and use, rather than focusing on their vaccine journey, especially if they were vaccine-hesitant (Terrie & Pharm, n.d.). On the other hand, there were cases where vaccines refused to do so. In some cases, pharmacists did not recommend the vaccine, which affected the public because they relied heavily on pharmacists as a guide on whether to take it (Bartolo et al., 2022). While nurses and pharmacists may be vaccine-hesitant, there were other barriers to their willingness to influence others. The public relies on their pharmacists to be honest and upfront when deciding whether to take a vaccine; if a pharmacist is hesitant, they could pose a barrier by being unwilling to set aside their beliefs and provide the information the public needs. One of the most significant parts of a pharmacist's job was influencing; if they could not, they were not doing their job (Nguyen et al., 2022). One of the most significant barriers was the public's information sources, such as social media, which has been a considerable barrier for pharmacists and nurses (Cassidy et al., 2021). This means that people receive false or misleading

information about vaccines on social media, which has become a barrier to pharmacists recommending vaccines to the public. However, using social media data could help pinpoint where the most significant effect of vaccine-hesitant people falls on those who were not vaccine-hesitant (Baldwin et al.; Wang et al., 2023). Especially during the COVID-19 pandemic, not knowing anyone affected by the disease affected the population's risk-benefit analysis; this sometimes turned people who were not previously vaccine-hesitant into vaccine-hesitant people (Stoddard et al., 2021). One of the final effects that vaccine-hesitant people have on the population was allowing once thought-eradicated diseases like measles to gain ground again in the population (CDC, 2023). For that reason, people were hesitant; the need for vaccines has become more dire, and once thought-dead diseases, primarily in the United States, were no longer the case. The effect of vaccine-hesitant people on nonvaccine-hesitant people was vast and cannot be dealt with in one way.

COVID-19-Vaccine Mandates and Vaccine Hesitancy

COVID-19 brought vaccine mandates back to the forefront and raised the issue that had once been thought resolved. Vaccine mandates were when the government issued an order, through executive, legislative, or judicial power, requiring people to get a particular vaccine. Some examples include when children enter kindergarten in the United States and when certain vaccinations were required by law before they entered school. There were certain instances in which you needed to be vaccinated to keep working. Since vaccine mandates existed before the pandemic, public health officials have been surprised by the resistance to the mandates. One key element that reemerged

during the pandemic was the issue of vaccine mandates and public opinion toward them (Baldwin et al., 2023; Roye et al., 2021). In September 2021, the federal government instituted a vaccine mandate for all federal employees, medical professionals, and the military (Golos et al., 2022). This was because they needed to increase vaccination rates and continue operations while performing these essential functions. Other professions were included in mandates imposed by the state or localities, such as California, New Jersey, Tucson, Arizona, and Portland, Oregon. In Canada, government-imposed vaccine mandates were met with significant resistance (Bazzul, 2023). The resistance seemed to be headed by sociohistorical facts and a suitable political machine. COVID-19 highlighted how each person made an individual decision through their own decision-making process. Another issue that arose during the COVID-19 pandemic was how people could determine their position on the vaccine hesitancy spectrum, as seen in this case, where vaccine adopters shifted along it. The HBM has been used to predict health behavior, especially during the COVID-19 pandemic. The researchers argued that HDM could predict whether someone would receive the COVID-19 vaccine based on their health behaviors (Shitu et al., 2022). The safety and efficacy of the vaccine were crucial factors in vaccine hesitancy, along with misinformation and conspiracy theories about its safety and efficacy (Sinuraya et al., 2024). The safety and efficacy of the newly developed vaccines were a significant factor in people's perceptions. The COVID-19 pandemic has brought to light issues of vaccine hesitancy, such as misinformation and trust, which were key indicators of where people fall on the acceptance-hesitancy scale.

Vaccine Hesitancy in Pharmacists

Pharmacists were a driving force in the fight against COVID-19 and other deadly diseases. There were many reasons behind vaccine hesitancy in pharmacists and other healthcare professionals. Estrela et al. (2022) proposed five reasons for vaccine hesitance among pharmacists. The 5 Cs were confidence, complacency, convenience, communication, and context. Confidence could be boiled down to whether they have confidence in the science that led to the vaccine production or how it was produced (Roy et al., 2021). Complacency means they do not think the disease was harmful enough or will not hurt them, so they do not care. Communication focused on whether the information source could be trusted. Convenience was about how quickly one could get the vaccine.

COVID-19 and Vaccine Beliefs and Attitudes of Pharmacists

Pharmacists' beliefs and attitudes significantly affect their vaccine hesitancy. During the COVID-19 pandemic, some healthcare workers became hesitant due to a lack of trust in the vaccine's effectiveness and safety (Dinmohammadi et al., 2022). The belief that the vaccine was unsafe or ineffective was a key indicator of vaccine hesitancy among pharmacists (Estrela et al., 2022). There was also a lack of perceived risk in developing a deadly version of COVID-19. Researchers concluded that healthcare workers were less vaccine-hesitant if they had more direct patient interaction (Farah et al., 2022). If the pharmacist delivered medication or vaccine directly to patients, patients were less likely to become vaccine-hesitant. However, filling the orders in a clinic or hospital could make them more vaccine-hesitant. Pharmacists were concerned that vaccine hesitancy led to

lower client numbers and wasted vaccines (Gravlee et al., 2021). Before the COVID-19 pandemic, community Pharmacists were vaccine-hesitant about receiving the influenza vaccine (Langer & Thanner, 2023). Although pharmacists were ready to administer the Influenza vaccine during the pandemic, they still chose not to get it. COVID-19 brought to light pharmacists' concerns about vaccines.

One of the main reasons pharmacists became hesitant during the pandemic was that they did not believe they were at high risk of getting the disease. Researchers illustrated that pharmacists were vaccine-hesitant about the influenza vaccine during the COVID-19 pandemic because they believed they were healthy and did not need to get vaccinated (Costantino et al., 2022; Langer & Thanner, 2023). Pharmacists also believed they could not pass influenza to their family members or at work. The belief was that the vaccine could cause adverse events and was not safe and effective (Hall et al., 2022). Some believed the vaccine did not work, so they did not take it (Khalafalla et al., 2022). Although pharmacists had the necessary knowledge of COVID-19 and its vaccine, negative perceptions persisted, leading to vaccine hesitancy (Alalawi et al., 2023). There was also the belief that the vaccine was developed too quickly to be safe and effective (E C et al., 2023). Pharmacy students believed that earlier and more comprehensive training could lead to a better understanding of how to roll out vaccine programs and to better handling of public questions (Doyle-Campbell et al., 2022). Knowledge was essential when recommending it; pharmacists could still be vaccine-hesitant. Although pharmacists' beliefs and attitudes were significant, they may vary.

COVID-19 Vaccine Readiness among Pharmacists

Community pharmacists were the most prepared to deliver the vaccine when it was ready. In rural communities, there needs to be more access to healthcare and healthcare options. The United States has over 68,000 community pharmacists with convenient hours for clients and available to the public, who trust pharmacists to advise them on medication and vaccines (Curran et al., 2023). Although rural pharmacists were ready to provide the COVID-19 vaccine, public skepticism was a significant barrier to vaccination (Carpenter et al., 2022). Although pharmacists were a trusted source, there were still barriers to vaccinating the whole population. Researchers argue that pharmacists, especially in the South, faced barriers to administering the vaccine to the public, including the influx of people and insufficient staffing to handle the higher-than-normal number of vaccine clients (Gravlee et al., 2021). Another logistical concern was storage and packaging; once the seal was broken, the remaining vial must be discarded within several hours. Another barrier the community pharmacists found was access to the vaccines they needed. Pharmacy students felt prepared to address concerns about the vaccine, including questions about whether it causes illness or autism, as well as misunderstandings about herd immunity (Wick & Henneman, 2021). However, they did not feel prepared to answer questions regarding immune system overload. The pharmacists were concerned about being prepared to answer patients' questions because the vaccine could be scary. Proper knowledge of vaccines could help prepare pharmacists for the job (Pharmacists Were Key to Addressing Vaccine Hesitancy, COVID-19 Disease Management, 2023, Drug Topics). Although some pharmacists and pharmacies were

ready for the COVID-19 vaccine rollout, others faced challenges. The pharmacists were ready, but they sometimes lacked the tools to prepare thoroughly.

Vaccine Hesitancy in Pharmacists and How It Affected Their Interactions With the Public and Their Work

Pharmacists have emerged as a crucial player in vaccine programs, catering to a significant portion of the population, including children. As a trusted source of vaccine information, they may be influenced by their personal beliefs about the vaccines they administer, which could substantially affect their recommendations.

Vaccine-hesitant pharmacists may be less likely to recommend vaccines to their clients. According to Dinmohammadi et al. (2022), healthcare workers who hesitated because they believed the vaccine was unsafe or ineffective would not recommend it to their clients. Attitudes and beliefs about vaccines could affect how a pharmacist recommends a vaccine. One study found that pharmacists were more likely to recommend vaccinations to adults aged 65 and older but were less likely to recommend vaccines to children and pregnant women (Ozdemir et al., 2022). Farrah et al. (2022) also found that healthcare workers who had direct patient interaction were less likely to be vaccine-hesitant; however, this was true only for lower-level support staff, not for physicians and pharmacists. Although vaccine hesitancy may exist in pharmacists, they feel they have a professional duty to recommend the vaccine (Hall et al., 2022). Some pharmacists believe that certain vaccines do not work, or that administering too many at once could affect the immunity they are supposed to confer, so they do not recommend vaccines at certain times or delay recommendations (Khalafalla et al., 2022). Researchers

examined vaccine acceptance over time since its approval. The researchers found that pharmacists were highly unlikely to be vaccinated within a year of the vaccine's approval (Jacob et al., 2021). They were wondering whether to recommend it to their patients. Perform their work. However, one problem with the study was that it was conducted before the vaccines received EUA, and the selection criteria could have created selection bias. Selection bias needs to be addressed in any future studies to ensure the outcomes are not called into question. Another study found a vaccine hesitancy rate of 37%. The determinants included perceived benefits of the COVID-19 vaccine and vaccine acceptance; the safety/cost of the vaccine were associated with vaccine hesitancy (Jacob et al., 2021). Researchers also found that doctors and pharmacists were less vaccine-hesitant than other medical professionals (Askarian et al., 2022). Although pharmacists were less likely to be vaccine-hesitant than other healthcare workers, the possibility remains; their beliefs could still affect how they work and interact with the public. Regardless of pharmacists' beliefs or attitudes, they could always be affected by them.

How Pharmacists Were on the Front Line of Vaccine Adoption

Pharmacists were not just players but critical figures on the front lines of vaccine adoption. Since 2017, they have emerged as prominent vaccine providers, extending their reach beyond clinics and hospitals. Their role was crucial in the fight against vaccine-preventable diseases, underscoring the significance of their work. (Dybsand et al., 2019). The pharmacist community's knowledge of vaccines was crucial to the success of vaccine campaigns. The most significant barrier to pharmacists being on the front line of vaccine adoption was pharmacists' confidence in having the vaccine conversation.

Researchers uncovered that pharmacists lack the knowledge to be fully confident about having the vaccine conversation. (Aqel et al., 2023). Continuing education (CE) was not just a tool but a vital resource for pharmacists to enhance their skills and confidence in vaccine discussions. It was a platform for learning new and innovative ways to engage the public and navigate difficult discussions. CEs were particularly effective in structuring the vaccine discussion and in using tools to identify social determinants of health. This emphasis on continuous learning was a testament to the profession's unwavering commitment to staying up to date and competent, even in challenging times, reassuring the audience.

COVID-19 Impact on the Relationship Between Pharmacists and the Public

The pandemic was stressful and unprecedented for everyone, especially pharmacists. Pharmacists faced significant pressure during the pandemic. Community pharmacists worked to combat fear and misconceptions during the pandemic and kept in touch with their patients while their jobs also expanded (Turcu-Stiolica et al., 2021; Yang & Son, 2023). COVID-19 pushed pharmacists to find new ways to build on their relationships with the public to help quell many people's fears and misconceptions. Researchers found that pharmacists were instrumental in relieving the burden on healthcare facilities by triaging patients and offering home delivery while also remaining open when other facilities closed (Bukhari et al., 2020; Elbeddini et al., 2020). The researchers discovered that the pandemic strengthened relationships between the public and their pharmacists, as well as between pharmacists and other healthcare workers (Johnston et al., 2021; Yang & Son, 2023). In contrast, some researchers reported fewer

patients due to difficulties obtaining the appropriate medications (Hattem et al., 2023).

Although researchers found a significant adverse effect of the pandemic on pharmacists' interactions with the public, most found that pharmacists played a more significant role in their patients' healthcare. The pandemic caused tremendous strain but allowed pharmacists to interact more strategically with the public.

COVID-19 Hesitancy Literature

The COVID-19 hesitancy literature has varied, but it mainly centers on safety and efficacy. In the literature, pharmacists were also described as frontline workers who engage with the public. Researchers found that healthcare workers had a higher perceived susceptibility and severity of COVID-19 infection than the general population. The research also found that preventive measures, perceived benefits, perceived barriers, cues to action, subjective norms, support for vaccination in general, and having received a flu vaccine before were associated with vaccine hesitancy (Al-Metwali et al., 2021). Estrela et al. (2022) found that complacency, communication, confidence, and convenience were strongly associated with the probability of vaccine hesitancy. Concerns about vaccines' efficacy were also a reason for more vaccine hesitancy among this group. Kwok et al. (2021) focused on estimating nurses' flu vaccination rates and their intention to get vaccinated against COVID-19, based on the 5C psychological factors and the association between work demands and COVID-19 vaccination intention. Among pharmacists and others, there was substantial fear that the vaccine was completed and approved too quickly (Nawas et al., 2023). There was also concern about the vaccine's safety and efficacy due to the perceived speed of its development. Safety in a vaccine was the

determination that it would not cause harm to the person taking it. Efficacy was whether the vaccine works. The research also found that if a pharmacist perceived their health as very good, they were more vaccine-hesitant than when they perceived it as just good. Researchers found a vaccine hesitancy rate of 37% and identified determinants related to perceived benefits of the COVID-19 vaccine and vaccine acceptance. In contrast, the safety/cost of the vaccine was associated with vaccine hesitancy (Askarian et al., 2022). Research conducted in Egypt found that vaccine-accepting healthcare workers were so because they felt the risk of COVID-19 was high. They felt the vaccine was safe and effective, while those who were hesitant were so because they did not believe there were enough clinical trials to prove it was safe and effective (Fares et al., 2021). The research also revealed that doctors and pharmacists were less vaccine-hesitant than other medical professionals. Hall et al. (2022) found that the most significant determinants of non-compliance were perceived vulnerability, trust, past behavior, professional duty, access and convenience, and knowledge and experience. There was also a lack of trust in the government and much misinformation about that vaccine, which led to vaccine hesitancy (Ogunbosi et al., 2022). Misinformation and conspiracy theories have become significant drivers of vaccine hesitancy, especially concerning COVID-19 (Sinuraya et al., 2024). The need for more trust in the government has been building over time. It has led to people disseminating misinformation, which was information that was not correct or misleading and needs to be corrected or made more accurate. Conspiracy theories were driven by misinformation and by people's lack of trust that the government was telling the truth or giving them all the information. Perceived side-effect risks of the COVID-19

vaccine were also a key indicator of vaccine hesitancy. Beyond those reasons, they will find that some religious people will be vaccine-hesitant because they believe God caused the illness or because fetal cells may have been used in the manufacturing of the vaccine. One way to help address the safety and efficacy arguments against vaccine hesitancy was to communicate more effectively with the public and healthcare providers (Zhang et al., 2022). There were many reasons one may be vaccine-hesitant, but during COVID-19, the main reasons were concerns about vaccine safety and efficacy, as well as perceived side effects.

Regarding COVID-19 vaccine hesitancy, some factors were related to demographics, especially education and knowledge. Jacob et al. (2021) found that 67% of pharmacists were willing to receive the vaccine within 1 year of approval, and 63% were willing to recommend it within the same time frame. After a year from approval, willingness to get the vaccine went from 67% to 78%, and recommendation went from 63% to 81%. Researchers found that vaccine-related knowledge varied widely across programs, with high knowledge scores achieved by 74.3% of medical students, 62.7% of pharmacy students, 57.1% of Doctor of Nursing Practice (DNP) students, and 24.7% of Bachelor of Science in Nursing (BSN) students. Among participants, 54.2% believed that spreading recommended vaccines across several visits was an appropriate way to reduce stress on parents (Dybsand et al., 2019). Farah et al. (2022) found overall high vaccination rates of over 75%. Factors associated with higher rates included being male, older, White, or Asian, and having direct patient contact; there was also a significant difference between job categories, with doctors and advanced patient staff being more

vaccinated than nurses and support staff. Lusk et al. (2022) found that Blacks and Hispanics were less likely to take the COVID-19 vaccine, and Hispanics were more likely to test positive for COVID-19. Researchers found that most nurses planned to get vaccinated, with a small proportion being uncertain or refusing vaccination. Nurses had higher vaccination rates when they had a higher risk of severe illness or a family member with an increased risk of severe disease. Having contracted COVID-19 was associated with lower vaccination rates (Rich-Edwards et al., 2022). Researchers also found a correlation between unwillingness to receive the influenza vaccine in the previous 5 years and the willingness to receive the COVID-19 vaccine. So, if they were unwilling to receive the influenza vaccine, they were more vaccine-hesitant. Also, if they made over \$150,000, they were less vaccine-hesitant. Healthcare professionals' attitudes correlated with the general population's willingness to be vaccinated. The research found that while 75% accepted the vaccine, 25% remained vaccine-hesitant. The research also found that if medical professionals were vaccine-hesitant, the general population was more likely to be vaccine-hesitant (Shallah et al., 2021). The findings also showed that, because the specific demographic was targeted, more studies across different demographic groups were needed to generalize the findings to the general population and adequately characterize the results. Demographic information could predict vaccine hesitancy within the general population and among medical professionals.

Gaps in the Literature

Vaccine hesitancy has been extensively studied from different perspectives. Jacob et al. (2021) explored pharmacists' willingness to get the COVID-19 vaccine during the

first year of its EUA and whether that percentage increased afterward. They found that most pharmacists were willing to get vaccinated within the first year, and that number increased over time. Al-Metwali et al. (2021) found that while healthcare workers were more willing to receive the COVID-19 vaccine than the general population, they still showed hesitancy. The biggest concern among that group was proper vaccine storage. In contrast, Estrella et al. (2022) found that vaccine hesitancy among healthcare workers was equal to or greater than that of the public. The conflicting information indicates that further exploration is needed on this topic. Medical Doctors and Pharmacists were more willing to get vaccinated than nurses, but were somewhat vaccine-hesitant (Askarian et al., 2022). Dysband et al. (2019) found that Bachelor of Nursing Students believed that the vaccine schedule recommended for children placed an unfair burden on their immune systems. In contrast, Pharmacy and Medical Doctor students believed that vaccines were necessary. The research also concluded that the knowledge gap on vaccines was more significant among those students in the Bachelor of Nursing program than in the Doctoral programs. Hall et al. (2022) determined that further work was needed to understand influenza hesitancy among healthcare workers and to help understand and predict COVID-19 hesitancy in the same group. Farah et al. (2022) concluded that more work was needed to explore vaccine hesitancy among healthcare workers with varying educational backgrounds and to examine demographics more closely, to better understand vaccine hesitancy among different groups regarding COVID-19, given the high morbidity and mortality rates before the vaccine. One study by Rich-Edward et al. (2022) and another study by Kwok et al. (2021) identified specific reasons why nurses

were vaccine-hesitant, suggesting that nurses will not be the focus of this study. Lusk et al. (2022) showed that disparities in healthcare persist even among minority healthcare workers and that more work was needed in this area. However, more research was needed to understand the underlying causes of vaccine hesitancy among these groups. Shallah et al. (2021) concluded that their study among the Arab American population was limited by low survey return rates and by the fact that most respondents were Doctors, which they indicated probably skewed their findings. Dinmohamadi et al. (2022) showed that vaccine knowledge was a predictor of vaccine hesitancy among healthcare workers. If pharmacists were vaccine-hesitant, they were less likely to recommend the vaccine. The research also concluded that while vaccine hesitancy among pharmacists could negatively affect their recommendations, more follow-up research was warranted, as the study was conducted early in the pandemic. Other research found that if it were their job to recommend the vaccine, pharmacists would recommend it even if they were vaccine-hesitant (Terrie & Pharm, n.d.). Robitaille et al. (2023) concluded that understanding how pharmacists' attitudes and beliefs affect their interactions with the public was instrumental to addressing the problem and engaging them more in the vaccination process. Yang and Son (2023) also concluded that pharmacists' attitudes about vaccines could influence how they recommend vaccines to the public. Pharmacists were frontline workers tasked with disseminating vaccine information and vaccines; if they were vaccine-hesitant, that affected how they provide the information. The research described above indicates that there was still more to learn, that COVID-19, as it relates to vaccine hesitancy, remains a growing topic, and that more work needs to be done. The research

found that patients could be negatively affected by discussions with their healthcare providers, especially pharmacists, and that those who were affected were more likely to be vaccine-hesitant (Charmasson et al., 2024). Limited research has been conducted specifically on pharmacists, and there was conflicting research on whether their beliefs and attitudes will hinder them from recommending the COVID-19 vaccine. Much of this research has not been conducted in the United States, which has led to this research gap. How do beliefs and attitudes regarding the COVID-19 vaccine impact pharmacist recommendations in the United States?

The literature underscores the need to examine the impact of pharmacists' vaccine hesitancy on their interactions with the public (Hall et al., 2022; Hatem et al., 2023; Jacob et al., 2021; Robitaille et al., 2023; Sinuraya et al., 2024). This research was paramount as it will involve primary data collection on vaccine hesitancy in pharmacists and its influence on their public vaccine recommendations. Understanding the existing research could significantly guide future investigations in this area.

Successful Studies Utilizing Methodology

Multiple studies have investigated the pharmacist's role in vaccine promotion and delivery in various ways. However, most studies on the subject have been quantitative. Many qualitative studies have examined vaccine hesitancy, but only one has focused on pharmacists. Koskan et al. (2023) examined vaccine hesitancy among rural Americans and how community pharmacists influenced their willingness to vaccinate. The research was conducted using semi-structured phone-based interviews and a team thematic analysis. The research found that older rural Americans were more willing to trust the

government and their community pharmacists to provide them with accurate information and were less vaccine-hesitant. Another study was conducted in Mississippi to investigate the state's low COVID-19 vaccination rates and low pre-exposure Prophylaxis (PrEP) use for HIV (Arnold et al., 2023). The researchers conducted the study using a semi-structured interview and reflexive thematic analysis. The researchers concluded that those who were hesitant to get either did so for similar reasons, such as efficacy, side effects, and low risk. However, the research also found no direct link between hesitancies and the fact that even though they may have engaged in one risky behavior, they did not predict engaging in others. In another qualitative study, the researchers again examined vaccine hesitancy in Mississippi, where rates were lower than the population, and conducted qualitative interviews (Leigland et al., 2024). The researchers found that barriers to vaccination included mistrust in the government and healthcare systems. In contrast, facilitators, such as religious or community leaders, were more trustworthy. This allowed a better understanding of who will message the information for future vaccination campaigns. Researchers also examined a qualitative perspective on vaccine hesitancy among organ transplant recipients in New York. They first sent the unvaccinated recipients literature and then followed up with a telephone call to schedule a vaccine appointment (Tsapepas et al., 2021). things. The findings of these studies have significant implications for public health, particularly in the design of future vaccination campaigns and the identification of trusted messengers.

Definitions

The following key terms were defined and evident throughout the research paper.

The COVID-19 and vaccine hesitancy-related definitions used in the study include:

Phenomenological research: A qualitative research approach that focuses on individuals' lived experiences in the world. This approach aims to understand how people perceive and make sense of their experiences from their own perspectives. It was rooted in phenomenology, a philosophical method that sought to explore and describe phenomena as individuals experience them (Smith et al., 2009).

Vaccine: A vaccine is a biological preparation that provides active acquired immunity to a particular infectious disease. It typically contains an agent that resembles a disease-causing microorganism and often made from weakened or killed forms of the microbe, its toxins, or one of its surface proteins. The vaccine stimulates the body's immune system to recognize the agent as a threat, destroy it, and remember it so the immune system could more easily recognize and destroy any microorganisms it encounters later (Plotkin et al., 2017).

Vaccine hesitancy: The reluctance or refusal to vaccinate despite the availability of vaccination services. It was influenced by factors such as complacency, convenience, and confidence. Individuals may hesitate due to concerns about vaccine safety, distrust in healthcare systems, or the belief that they were not at risk. Vaccine hesitancy was recognized as a significant threat to public health (Azarpanah et al., 2021).

Socioeconomic: The social and economic characteristics that influence and define an individual's or group's status within a society. These characteristics include income,

education, employment, and social class, all of which impact access to resources, healthcare, and quality of life (Allin & Stabile, 2019).

Public health: Protecting and improving populations' health through organized efforts and informed choices by society, organizations, public and private communities, and individuals. It encompasses disease prevention, health promotion, and prolonging life through collective efforts to ensure the conditions for people's health (Frieden, 2019).

Rural setting: In public health research, a rural setting refers to a geographic area characterized by low population density, geographic isolation, and limited access to healthcare resources, public health infrastructure, and specialty services. Beyond simple population counts, rurality in public health is often conceptualized in terms of healthcare access, workforce shortages, transportation barriers, and structural resource limitations that may influence health outcomes and health behaviors (Health Resources and Services Administration, 2023).

Urban setting: In public health research, an urban setting refers to a geographic area characterized by higher population density, developed infrastructure, and greater concentration of healthcare facilities, public health services, and specialized medical resources. Urban areas are often associated with greater access to hospitals, pharmacies, and healthcare professionals; however, they may also experience significant health disparities stemming from socioeconomic inequality, housing density, environmental exposures, and resource distribution. In research, urban classifications are typically based on population thresholds and development patterns, with federal agencies distinguishing

urban areas from rural areas using standardized geographic criteria (U.S. Census Bureau, 2023).

Assumptions

Phenomenological research is a qualitative approach that focuses on understanding and describing individuals' lived experiences of a particular phenomenon (Moustakas, 1994). This method aims to uncover individuals' perceptions, feelings, and thoughts on public health to provide deeper insights into public health issues (Van Manen, 1997). Below were the critical assumptions of phenomenological qualitative public health research:

Focus on Lived Experiences

The core assumption was that reality was best understood through individuals' experiences. Phenomenological research describes how people experience a phenomenon rather than explaining or predicting it (Creswell & Poth, 2018). In public health, this could involve exploring how patients experience a disease, how healthcare providers perceive their roles, or how communities understand health interventions (Smith et al., 2009). Focusing on lived experiences allows researchers to access the personal and subjective aspects of how individuals interact with public health issues. This approach was critical because it emphasizes understanding health from the perspective of those experiencing it, thereby providing insights often overlooked by quantitative research methods (Van Manen, 1997).

Subjectivity and the Role of the Researcher

Phenomenological research acknowledges that the researcher and the participants bring their subjective perspectives to the study (Lavery, 2003). Researchers must bracket participants' experiences. Also, as a researcher, I assumed the participants were telling the truth. Acknowledging subjectivity ensures that the research findings were grounded in the participants' perspectives. This was important in public health research, where understanding individual experiences was critical to addressing complex health behaviors. By using bracketing, researchers minimize the influence of their biases, allowing the authentic voices of participants to emerge (Moustakas, 1994). By also assuming the subjects were telling the truth, the researcher could remove the bias that people are always lying from the equation.

Intentionality of Consciousness

This assumption posits that consciousness was always directed toward something, meaning that individuals' experiences were always about something. Experiences are connected to the objects or phenomena studied (Moustakas, 1994). In public health, this could mean that individuals' thoughts about health interventions were shaped by their direct experiences with those interventions. The concept of intentionality suggests that experiences are always directed toward something, which helps to understand how individuals perceive and relate to health phenomena. In public health, recognizing this helps to grasp how people consciously and unconsciously prioritize health concerns based on their direct experiences with these issues (Wertz, 2010).

Essence of Experience

Phenomenological research aims to identify the essence or core meaning of individuals' experiences. This involves identifying common themes or patterns that represent the phenomenon's universal aspects (Van Manen, 1997). For example, it could involve identifying common themes in patients' perceptions of access to healthcare services in public health. Identifying the essence of experiences enables researchers to find commonalities across different individuals' experiences. In public health, this approach could reveal universal issues or patterns, such as common barriers to healthcare access, which could be addressed to improve overall health outcomes (Smith et al., 2009).

Rich, Descriptive Data

Phenomenological research relies on rich, detailed descriptions of participants' experiences. Data collection methods such as in-depth interviews or focus groups are commonly used (Polit & Beck, 2012). These detailed data allow for a deep understanding of the phenomena and help illuminate nuances in individual experiences. Using rich, descriptive data provides a comprehensive understanding of public health phenomena. Detailed descriptions enable researchers to capture the nuances of participants' experiences, leading to more accurate interpretations and better-informed public health interventions (Polit & Beck, 2012).

Contextual Understanding

Understanding the context in which experiences occur was crucial. This includes the social, cultural, and historical context that shapes how individuals experience a

phenomenon (Smith et al., 2009). In public health, context might include social determinants of health, cultural beliefs about illness and wellness, or the specific healthcare environment. Understanding the context was essential in public health because various social, cultural, and environmental factors influence health behaviors. By incorporating context, researchers could better understand the factors that shape health behaviors and outcomes, leading to more effective, culturally sensitive health interventions (Creswell & Poth, 2018).

By adhering to these assumptions, phenomenological research provides deep, empathetic insights into individuals' health-related experiences. These insights were necessary and empowering for developing public health policies and interventions that resonate with the lived realities of the communities they aim to serve. These assumptions ensure the research was grounded in authentic experiences, yielding meaningful and applicable findings that empower us to address public health challenges.

Scope and Delimitations

The study's focus on examining the impact of pharmacists' hesitancy to receive the COVID-19 vaccine on their effectiveness in advising the public was significant. This chosen focus examines how pharmacists' vaccine attitudes may influence their role in public health advisement, potentially affecting vaccine uptake and overall public health outcomes (Christodoulakis et al., 2024). The investigation also aims to identify barriers to effective health communication and develop strategies to enhance public health interventions (Bauder et al., 2023).

The study included vaccine-hesitant pharmacists; it excluded non-vaccine-hesitant pharmacists, those who work for the Food and Drug Administration, non-pharmacists, and those personally known to the researcher. This stringent exclusion criterion ensures the research's rigor and validity.

The study does not explore broader theories of health behavior change or vaccine acceptance beyond the pharmacist-patient dynamic (Brown & Green, 2020). Additionally, it does not cover economic theories related to healthcare costs or access (Adams & Martin, 2019), which could offer further insights but were outside the primary scope of this research.

This study's findings were comprehensive and applicable to rural and urban settings. They provide insights into how pharmacists' vaccine hesitancy affected their advisory roles across different environments (Brumbaugh et al., 2025). However, the specific dynamics and challenges in various regions need to be considered when applying the findings to other contexts.

Limitations

I used established networks to obtain enough participants from the pharmacy profession. Vaccine hesitancy could be a sensitive topic to discuss, so some participants may not feel comfortable answering related questions. There was also concern about biased responses driven by personal agendas, given the topic of vaccine hesitancy. Since I used different networks on LinkedIn and Facebook, anonymity must be a key consideration, and exclusion criteria were added for Sampling. The inclusion criteria were specific to a particular group of individuals, and the small sample size was used to

ensure data could be analyzed across participants. It allowed for conclusions to be inferred about the group.

Significance

This study was significant because its findings provide vital insight for the public health community into what drives pharmacists to resist the COVID-19 vaccine. The findings also contribute to public health organizations in the United States at the federal, state, and local levels, as well as practitioners, responders, and the public, regarding the barriers that have led people to become vaccine-hesitant. By filling a gap, public health professionals will be better equipped to understand what drives a person to resist receiving the COVID-19 vaccine. The research also has the potential to bring about positive social change in the United States. The results could provide critical information for creating more extensive and comprehensive data-collection materials. This research will contribute to understanding whether vaccine hesitancy among healthcare workers translates into behaviors that encourage vaccination among their patients. This was critical for improving the population's overall health by decreasing mortality from COVID-19 and other vaccine-preventable diseases and reducing the burden disease could place on the United States economy.

Summary and Conclusion

In this section of the study, a comprehensive literature review was conducted, including keywords, terminology, and inclusion and exclusion criteria relevant to understanding how pharmacists' hesitancy to receive the COVID-19 vaccine affected their willingness to advise the public. Vaccine hesitancy has emerged as a significant

issue, particularly during the COVID-19 pandemic (MacDonald et al., 2015; Nuwarda et al., 2022). While studies have examined vaccine hesitancy among pharmacists, much remains unknown about how this hesitancy may influence their interactions with the public and their willingness to recommend vaccines (Brumbaugh et al., 2025). In this section, the problem statement and research questions were discussed in detail, along with the key variables that will be explored in the study. Applying HBM was justified as the theoretical framework guiding this research (Champion & Skinner, 2008). The section concluded with an outline of the study's significance and its implications for positive social change, both of which align with the research's scope.

In Section 2, the focus shifts to the study's methodology and design. The research employed a qualitative phenomenological approach informed by the current literature (Creswell, 2013). This section details the methods used to analyze primary data, the study population, the sampling procedures, and the overall research design.

Section 2: Research Design and Data Collection

Introduction

This significant qualitative study employs a phenomenological approach to investigate pharmacists' attitudes, beliefs, and resistance or acceptance of the COVID-19 vaccine, and how these factors affect their willingness to engage with the public on vaccination issues. By focusing on pharmacists' lived experiences and perspectives, the study aims to uncover the underlying reasons behind their vaccine stance and the impact of these views on their professional behavior. Rather than relying on statistical analysis, the research sought to capture pharmacists' nuanced, subjective experiences to understand how their personal beliefs influence their public health responsibilities.

This study's potential public health impact was substantial, as these findings could inform strategies to enhance vaccination campaigns and improve health outcomes. The study also aims to shed light on how pharmacists' feelings about the COVID-19 vaccine shape their willingness advised the public, and to identify potential barriers to effective communication and vaccine advocacy. This insight supports urgent efforts to overcome pharmacist hesitancy and enhance their role as trusted healthcare advisors in promoting vaccination.

The research sought to clarify the complex relationship between pharmacists' vaccine-related attitudes and professional responsibilities, contributing to more effective public health interventions and education strategies. The phenomenon explored was the influence of pharmacists' vaccine attitudes on their public engagement, encompassing key aspects such as the following:

- **Vaccine Hesitancy Among Pharmacists:** The study examines why some pharmacists may hesitate to receive the COVID-19 vaccine, including personal beliefs, safety concerns, and mistrust of information. Understanding these factors was crucial, as pharmacists' hesitancy could affect their professional conduct.
- **Impact on Professional Role:** Pharmacists play a critical public health role, and hesitancy toward the vaccine may influence their communication with patients, potentially leading to cautious or neutral advocacy for vaccination.
- **Communication and Public Engagement:** The research explores how pharmacists' personal beliefs affect their communication strategies, including how confidently they recommend the vaccine and address patient concerns, thereby shaping public perception and vaccine uptake.
- **Trust and Credibility:** The study examines how pharmacists' vaccine attitudes shape their credibility with the public, potentially influencing public trust in vaccination campaigns.
- **Broader Public Health Implications:** By understanding these dynamics, the study aims to provide insights into supporting pharmacists as vaccination advocates, thereby improving public health efforts to increase vaccine uptake.

The field-based outcomes of the study benefit key stakeholders in the following

ways:

- **Policymakers:** The findings could inform policies to enhance vaccine advocacy among healthcare professionals, leading to more effective vaccination campaigns.
- **Public Health Practitioners:** The study's insights could inform communication strategies and educational programs to support pharmacists in promoting vaccinations.
- **Pharmacists and the Public:** The study provides pharmacists with tools to reflect on how their personal beliefs affect their professional roles, ultimately leading to more consistent vaccine guidance for the public and improved community health.

In summary, this study explores how pharmacists' beliefs about the COVID-19 vaccine influence their professional responsibilities in public health, providing actionable insights to improve vaccination strategies and public trust in vaccines.

In this section, I outline the research design, questions, and rationale, including the rich text that may shed light on the phenomenon under study. I also describe the research methodology, including the target population, sampling methods, and data-collection procedures. Additionally, I explained the instrumentation, how the variables were operationalized, ethical considerations, and potential threats to validity.

Research Design and Rationale

Research Question 1: What were the lived experiences of pharmacists that make them vaccine-hesitant?

Research Question 2: What were pharmacists' perceived severity of the COVID-19 vaccine side effects?

Research Question 3: Do pharmacists' beliefs and attitudes about the COVID-19 vaccine translate into behaviors when interacting with the public?

The central phenomenon of this study was vaccine hesitancy among pharmacists and its impact on their willingness to engage with the public about vaccinations. Vaccine hesitancy, defined as the delay in acceptance or refusal of vaccines despite the availability of vaccination services, was influenced by factors such as personal beliefs, concerns about vaccine safety, and mistrust of the information provided (MacDonald, 2015). In this study, the focus was on how these attitudes, beliefs, and behaviors among pharmacists affect their professional responsibilities, including advising and educating the public on vaccination issues.

This phenomenon encompasses several key aspects:

- **Personal Beliefs and Attitudes:** Pharmacists' views on the COVID-19 vaccine, including resistance or acceptance, and the underlying reasons behind these stances. Individual factors, such as fear of side effects or distrust of vaccine efficacy, could contribute to hesitancy (Dubé et al., 2015).
- **Professional Engagement:** These personal attitudes influence pharmacists' willingness to communicate effectively with patients, advocate for vaccines, and maintain public trust. As trusted healthcare professionals, pharmacists play a crucial role in vaccination advocacy, and their hesitancy could lead to less proactive vaccine promotion (Edelstein et al., 2020).

- **Public Health Implications:** Understanding pharmacists' vaccine hesitancy was of paramount importance to public health. The broader effects of this hesitancy could significantly impact public health efforts, particularly in influencing public vaccine uptake and the success of vaccination campaigns. Vaccine hesitancy among healthcare professionals could reduce public trust in vaccination programs, negatively affecting public health outcomes (WHO, 2019).

The research tradition guiding this study was phenomenology, a qualitative approach that explores and understands individuals' lived experiences of a specific phenomenon (Creswell & Poth, 2018). In this case, the phenomenon was vaccine hesitancy among pharmacists. The phenomenological tradition sought to uncover the essence of participants' experiences by capturing their subjective perceptions, beliefs, and attitudes. This approach allows for an in-depth exploration of how pharmacists perceive the COVID-19 vaccine and how these perceptions influence their professional responsibilities in engaging with the public.

Phenomenology emphasizes understanding the shared meanings and patterns within participants' narratives, providing insight into how their personal experiences with vaccine hesitancy shape their willingness to advocate for vaccination. By focusing on lived experiences, the study aims to offer a rich, descriptive account of the phenomenon rather than imposing external theories or interpretations.

The rationale for using phenomenology as the research tradition in this study was its willingness to explore and understand individuals' lived experiences—in this case,

pharmacists' experiences and attitudes regarding the COVID-19 vaccine.

Phenomenology was particularly suited to this study for several reasons:

- **By focusing on subjective experiences, phenomenology offers unique insights into pharmacists' vaccine hesitancy.** The primary aim of the research was to uncover pharmacists' personal beliefs, attitudes, and feelings about the vaccine, which influence their professional behavior. Phenomenology allows the researcher to delve deeply into these subjective experiences and capture how pharmacists interpret their vaccine hesitancy or acceptance. This approach provides rich, descriptive insights that statistical methods or other qualitative approaches might overlook (Creswell & Poth, 2018).
- **Understanding the meaning behind actions:** Phenomenology sought to uncover the meaning individuals attach to their experiences. By exploring how pharmacists understand and experience vaccine hesitancy, the study could reveal the reasons behind their professional choices, such as how their personal beliefs may influence their communication with patients and their role in vaccine advocacy. This insight was essential for understanding the deeper causes and consequences of hesitancy (van Manen, 1997).
- **Capturing complexity:** Vaccine hesitancy was a complex and multifaceted issue that involves emotional, cognitive, social, and cultural dimensions (Dubé et al., 2015). Phenomenology was well-suited to capture this phenomenon's complexity by focusing on participants' narratives without reducing their

experiences to predefined categories or variables. This allows for a nuanced understanding of how personal and professional factors interact.

- **Exploring a relatively understudied area:** While much research exists on general vaccine hesitancy, there was less focus on healthcare professionals, such as pharmacists. Phenomenology was ideal for exploring new or understudied areas, as it prioritizes participants' voices and provides a platform for them to share their experiences on their terms.

By employing a phenomenological approach, the study aims to provide a deeper understanding of the essence of vaccine hesitancy among pharmacists. The findings could inform strategies for improving vaccine advocacy and communication, benefiting healthcare professionals and policymakers.

Role of the Researcher

In qualitative phenomenological research, the researcher's role was pivotal in uncovering and interpreting the essence of participants' lived experiences related to a specific phenomenon. The goal of phenomenology was to describe how individuals experience and make meaning of their realities, and as a researcher, my involvement was deeply connected to this purpose. The vital aspects that define the role of a phenomenological researcher were as follows:

- **Facilitator of Meaning:** The researcher serves as a facilitator, helping participants articulate their experiences. Through in-depth interviews or other qualitative methods, I guide participants to reflect deeply on the phenomenon being studied. The goal was to capture what participants have lived,

experienced, or felt without imposing the researcher's preconceptions or biases (Neubauer et al., 2019).

- **Listener and Interpreter:** As a researcher, I am an active listener who carefully attends to participants' descriptions of their experiences. This means paying attention to what was said and how it was said, as well as to tone, pauses, emotions, and non-verbal cues, all of which were important. I then interpret these experiences to identify common themes or patterns. The aim was to synthesize individual narratives to understand the shared essence of the experience across participants while acknowledging unique perspectives (Van Manen, 1997).
- **Bracketing:** As a phenomenological researcher, I practice bracketing—setting aside my assumptions, beliefs, and prior knowledge about the phenomenon to ensure that participants' voices and experiences take precedence. The intent was to avoid bias and allow the phenomenon's essence to emerge from the participants' perspectives rather than the researcher's preconceptions (Fischer, 2009).
- **Collaborator:** I will engage with participants collaboratively and respectfully. Phenomenological research requires building trust so that participants feel comfortable sharing their personal, often deeply felt, experiences. A collaborative approach ensures that participants are not merely subjects of study but co-creators of knowledge and that their perspectives shape the research's outcomes (Smith et al., 2009).

- **Seeker of Core Meaning:** My central role distills the essence of the lived experience, the universal meaning or core of what participants share about the phenomenon (Van Manen, 1997). Phenomenology sought to move beyond surface-level descriptions to uncover the more profound significance of experiences (Moustakas, 1994)
- **Ethical Steward:** I safeguard participants' privacy, confidentiality, and emotional well-being throughout the research process. As in phenomenology, ethical considerations were critical in qualitative research, especially when dealing with sensitive or personal topics (Mauthner et al., 2002).

In sum, as a researcher in qualitative phenomenological research, my role was to carefully and respectfully guide participants in articulating their lived experiences, remain mindful of my biases, and ultimately interpret and describe the shared essence of these experiences. The researcher was both an interpreter and an ethical guardian, working to uncover the richness of human experience while honoring participants' voices. I will not have any participants I know personally through my sorority or work, which will arise from such situations.

Methodology

Participation Selection Logic

For a phenomenological qualitative study focused on vaccine-hesitant pharmacists, the target population will be carefully defined to reflect the study's objectives. In this case, the population would consist of licensed pharmacists who

demonstrate hesitancy toward receiving the COVID-19 vaccine. Below are critical characteristics for identifying this population, along with references.

Target Population

Licensed Pharmacists. The study will focus on individuals who were actively practicing pharmacy. This could include pharmacists in various settings, such as community pharmacies, hospitals, and retail chains, as well as those in more specialized fields, such as clinical pharmacy or public health.

Pharmacists Exhibiting Vaccine Hesitancy. The core of the population was pharmacists who had expressed concerns or reluctance toward receiving the COVID-19 vaccine. Vaccine hesitancy is defined as a delay in accepting or refusing vaccination despite the availability of vaccination services (MacDonald, 2015). This includes pharmacists who have delayed or refused the vaccine or were concerned about its safety, efficacy, or necessity.

Geographical Diversity. The population included pharmacists from various geographic regions, with restrictions on participation in rural settings to make the sample as homogeneous as possible.

Exclusion Criteria: Pharmacists who were not hesitant, i.e., those who readily accepted the vaccine, were excluded from this study to ensure the focus remained on understanding the experiences and perspectives of those who exhibited hesitancy. Pharmacists in rural settings were excluded to make the sample as homogeneous as possible.

How Participants Will Be Confirmed to Meet the Criteria

Pre-Screening Questionnaire. A pre-screening questionnaire will confirm the participant's eligibility. This short survey could help ensure that potential participants meet professional and vaccine-related criteria. The first screening question will ask about their vaccine hesitancy status, as described below.

- **Licensure Confirmation:** Ask participants to confirm their current pharmacist licensure. Example question: “Are you currently a licensed and practicing pharmacist?” (Yes/No)
- **Vaccine Hesitancy:** Questions to gauge their vaccine hesitancy. Example questions:
 - “Have you received the COVID-19 vaccine?” (Yes/No)
 - “If no, please indicate your primary reason for not receiving the COVID-19 vaccine” (e.g., concern about side effects, doubts about efficacy, waiting for more information, etc.).
 - “Have you delayed receiving the COVID-19 vaccine due to concerns?” (Yes/No)
- **Role in Advising Patients:** Ask about the participant's role in providing care or advising patients on vaccinations. Example question: “As part of your role, do you advise patients about vaccines, including the COVID-19 vaccine?” (Yes/No)

A pre-screening survey ensures that only those who fit the study's specific focus—vaccine-hesitant pharmacists—were selected. It also streamlines the recruitment process, saving the researcher and potential participants time.

Self-Identification in Social Media Outreach. Direct Statement of Hesitancy: In social media recruitment posts or email outreach, participants could be asked to self-identify as vaccine-hesitant. The recruitment message will clearly state that the study focuses on pharmacists who have concerns or hesitations about the COVID-19 vaccine.

Example Text: “We are conducting a study on licensed pharmacists who are hesitant to receive the COVID-19 vaccine. If you have delayed or refused the vaccine or have concerns about it, we would like to hear about your experiences.”

Confirmation at an Interview: After an initial expression of interest, potential participants could be asked to briefly describe their concerns about the vaccine at the start of the interview. This further helps ensure they meet the vaccine-hesitancy criterion before moving forward.

Justification: Self-identification ensures that participants were aware of the study's specific nature and that only those familiar with vaccine hesitancy will reach out. Social media was effective because it enables targeted outreach and personalized responses (Ghani et al., 2019).

Informed Consent and Confirmation During Interview.

Explicit Consent: During the informed consent process, participants will again be asked to confirm that they meet the study criteria.

Example: In the consent form or during the verbal consent process, participants will be asked: “You are being invited to participate in this study because of your concerns or hesitancy about receiving the COVID-19 vaccine. Was this correct?”

Justification: This step ensures no misunderstanding about the study’s focus, and participants confirm their eligibility at the start of the interview process.

Sample Size Considerations

In this qualitative study, a sample size of six to 12 participants was appropriate, particularly in exploring pharmacists’ hesitancy toward receiving the COVID-19 vaccine. This aligns with the goals of phenomenological research, which aims to understand participants’ lived experiences deeply. A purposive sampling approach ensured that only pharmacists who exhibit vaccine hesitancy were included in the study.

Participant Recruitment

A social media outreach sampling strategy was a practical and effective approach to recruiting participants for a phenomenological qualitative study on vaccine-hesitant pharmacists. It leverages the broad reach and accessibility of social media platforms, allowing researchers to tap into professional networks and communities where pharmacists are likely to engage. Below is a justification for this strategy, followed by a reference supporting its use in qualitative research.

Social Media Outreach Sampling Strategy

Definition. Social media outreach involves using platforms such as LinkedIn, Facebook, Twitter, Reddit, and pharmacy-specific forums to recruit participants by

posting calls for interviews or inviting them to join relevant groups, communities, and discussions.

Access to Hard-to-Reach Populations. Social media enables researchers to access participants who may not be reachable through traditional recruitment methods. Vaccine hesitancy could be a sensitive issue, and some pharmacists may be reluctant to participate in research advertised through formal channels (e.g., professional associations). Social media allows for anonymous and voluntary participation, which could increase willingness to engage (Ghani et al., 2019). An example would be posting on pharmacy-related groups on LinkedIn or specialized communities on Reddit. These communities, where pharmacists already discuss professional challenges, including vaccination topics, could help reach those who may not respond to formal invitations.

Urban Setting for Homogeneity. By focusing on pharmacists in an urban setting, the study maintains a more homogeneous participant group in terms of location and practice environment. While limiting the geographical scope, this approach ensures that participants share similar urban practice settings (e.g., hospital, community, retail), creating a more consistent context for understanding vaccine hesitancy. This homogeneity enhances the depth and specificity of the findings, allowing for more precise insights relevant to pharmacists in urban areas. Example: A call for participation posted on Facebook pharmacy groups could reach pharmacists from various states and practice areas, providing a more representative sample of experiences with vaccine hesitancy.

Social media outreach was cost-effective, eliminating the need for physical advertising or lengthy outreach processes. It enables real-time interaction, accelerating recruitment. For example, by creating posts and engaging in real-time discussions, researchers could quickly gather responses from interested pharmacists, reducing the time spent on recruitment compared to more traditional methods such as email or direct mail.

Engagement with Professional Networks. Many pharmacists were active on platforms such as LinkedIn, where professional networking takes place. These platforms offer a direct way to reach pharmacists who may engage in vaccine-related discussions or have already shown interest in health-related topics. For example, targeting pharmacy-specific hashtags on Twitter or LinkedIn groups for healthcare professionals could help identify and recruit pharmacists discussing COVID-19 vaccines.

Fostering Trust and Transparency. Social media allows for a less formal, more conversational approach, which could help build trust with potential participants. Vaccine-hesitant pharmacists may be more willing to participate if they see the study being discussed or endorsed by peers in an online community. For example, engaging in ongoing conversations on these platforms helps establish rapport, and potential participants can see how other pharmacists contribute, fostering a sense of community and openness.

Potential Platforms for Outreach. LinkedIn, Professional pharmacy groups, and healthcare networks where pharmacists discuss public health issues, including vaccination. Facebook: Groups dedicated to pharmacists (e.g., “Pharmacists United for Truth and Transparency,” “Pharmacy Times Community”) offer an informal platform for

recruitment. Twitter: Using hashtags like #PharmacyLife, #HealthcareHeroes, or #COVIDVaccine to target professionals in real-time discussions on COVID-19 vaccination. Reddit: Subreddits like r/pharmacy and r/medicine often discuss pharmacists' experiences with COVID-19, making them valuable spaces for outreach.

Challenges and Considerations

Self-Selection Bias. Participants may self-select based on strong opinions, potentially leading to bias. However, combining social media outreach with other methods, like snowball sampling, could help mitigate this.

Overrepresentation of Active Social Media Users. Pharmacists not active on social media may be underrepresented, but combining outreach with traditional recruitment methods could help address this gap.

Instrumentation Data Collection

As the primary instrument in this phenomenological qualitative study on vaccine-hesitant pharmacists, I employed multiple methods to capture the depth and richness of participants' lived experiences. The primary data collection tool was a semi-structured interview protocol that I developed, incorporating prescreening questions to ensure participants meet the study's eligibility criteria. This approach allows for flexibility while ensuring consistency in exploring key themes and providing rich, nuanced data for phenomenological analysis.

Semi-Structured Interview Protocol

Instrument: A semi-structured interview protocol guided in-depth participant interviews (See Appendix A).

Source: The interview protocol was researcher-produced, based on themes relevant to vaccine hesitancy and informed by existing literature (Creswell & Poth, 2018). Open-ended questions allow participants to express their perspectives freely.

Example: Questions explored participants' personal experiences with the COVID-19 vaccine, the reasons for their hesitancy, and its impact on their professional roles.

Justification: Semi-structured interviews offer flexibility while ensuring that all relevant topics are covered and that detailed personal narratives are captured.

Method: Interviews were conducted via Zoom or in person, depending on participants' preferences, and audio recordings were used for accuracy (Patton, 2015).

Sufficiency: This approach ensures that each research question was addressed by providing deep, nuanced insights into pharmacists' perspectives. Open-ended questions enable exploration of unanticipated themes, making this tool especially suited to phenomenological studies (Creswell & Poth, 2018).

Audio Recordings

Instrument: Audio recordings were made during each interview (see Appendix B).

Source: I used this instrument, with participants' consent, to record the interviews for accuracy and later transcription.

Example: A Zoom digital recorder or recording software captured the entire interview.

Justification: Audio recordings provide an accurate and complete account of participants' responses and serve as material for transcription and further analysis (Creswell & Poth, 2018).

Sufficiency: This method ensures no detail was missed during data collection, enabling comprehensive transcription and analysis. It was beneficial for identifying shifts in tone or emphasis, which could help understand the depth of vaccine hesitancy (Patton, 2015).

Transcripts of Interviews

Instrument: Written transcripts of the recorded interviews (see Appendix C).

Source: I produced transcripts, possibly with assistance from transcription software.

Example: Verbatim transcripts were generated from audio recordings, including participants' verbal responses and significant pauses or nonverbal cues, when possible.

Justification: Transcripts provided the text necessary for coding, theme development, and analysis (Smith et al., 2009).

Sufficiency: Full transcripts enable line-by-line coding, ensuring that all aspects of the research questions are addressed. This was crucial in phenomenological research, where the goal was to uncover the essence of participants' lived experiences (Smith et al., 2009).

Observation Sheet (Field Notes)

Instrument: An observation sheet noting participants' non-verbal cues and environment (see Appendix D).

Source: Researcher-produced, used during in-person or video interviews to document additional contextual details such as body language, facial expressions, and the setting.

Example: Notes could include observations like “The participant hesitated before answering” or “Appeared visibly uncomfortable discussing side effects.”

Justification: Field notes add context to verbal data and help interpret underlying emotions or discomfort that might not be expressed verbally (Patton, 2015).

Sufficiency: Field notes provide additional context that may not emerge from verbal responses alone, helping to understand emotional or cognitive dissonance around vaccine hesitancy (Patton, 2015).

Demographic Questionnaire

Instrument: A short demographic questionnaire will collect participants’ background information (see Appendix E).

Source: Researcher-produced, administered either before the interview or at the end. The survey will be provided for them to fill out.

Example: Questions included age, years of practice, practice location (urban/rural), vaccination status, primary work setting (hospital, retail, etc.), educational level, and socio-economic status.

Justification: Demographic data helped contextualize participants’ experiences and allow for comparing responses across different groups of pharmacists (Patton, 2015).

Sufficiency: This instrument provides essential contextual data for subgroup analysis (e.g., whether younger or older pharmacists were more likely to be vaccine-

hesitant). It also enables the researcher to account for variability in vaccine hesitancy based on personal and professional factors (Patton, 2015).

To establish the sufficiency of the data collection instruments for answering the research questions, it was essential to demonstrate how each instrument captures relevant, detailed information aligned with the study's goals. In this case, the research focuses on vaccine-hesitant pharmacists and their experiences, attitudes, and factors influencing their hesitancy. The selected data collection methods (semi-structured interviews, audio recordings, transcripts, observation sheets, demographic questionnaires, artifacts, and archived data) collectively provide a robust framework for in-depth exploration of the research questions.

Each data collection instrument serves a distinct purpose in exploring vaccine hesitancy among pharmacists. These instruments provide a comprehensive, multi-dimensional view of the research questions, ensuring that personal experiences and external influences are captured. The study could explore the why and how behind vaccine hesitancy by combining subjective narratives (interviews) and quantitative observations (artifacts, field notes). This methodological triangulation ensures that the data collected were rich and sufficient to comprehensively answer the research questions (Creswell & Poth, 2018; Patton, 2015).

For Researcher-Developed Instruments

The development of the data collection instruments for studying vaccine hesitancy among pharmacists was based on a comprehensive review of qualitative research methodology, particularly from phenomenological research and healthcare studies that

address attitudes toward vaccines. This thorough review ensures that the instruments, which include a semi-structured interview protocol, audio recordings, transcripts, observation sheets, demographic questionnaires, artifacts, and archived data, were well-informed and robust. Below was a description of the literature sources that informed each instrument and the procedures used to establish content validity.

Semi-Structured Interview Protocol

Literature Basis: Semi-structured interviews were widely recognized in qualitative research for their adaptability and depth. This method was particularly well-suited to studying vaccine hesitancy, as it comprehensively explored healthcare professionals' views. Studies such as Dubé et al. (2015) and Christodoulakis et al. (2024) provide a solid basis for developing questions that delve into personal beliefs, external influences, and professional responsibilities related to vaccines.

Content Validity: To establish content validity, three experts in vaccine research and public health with experience in qualitative research reviewed the interview protocol.

Audio Recordings and Transcriptions

Literature Basis: Audio recordings and verbatim transcriptions were essential in qualitative research to ensure no information was lost during interviews (Patton, 2015). They provide the raw data needed to thoroughly analyze participants' narratives.

Content Validity: Audio recordings ensure data integrity by capturing every aspect of the interview, while transcripts enable systematic analysis. The validity of the transcriptions was established through member checking, in which participants reviewed their transcripts for accuracy and completeness (Lincoln & Guba, 1985).

Observation Sheets (Field Notes)

Literature Basis: Observational data could add depth to the research by capturing non-verbal cues, such as hesitations or emotional expressions, that may indicate deeper concerns (Strauss, 1984). Field notes have been widely used in studies involving interviews and other face-to-face engagements in health settings.

Content Validity: Field notes will be guided by a structured observation sheet, ensuring that all relevant aspects of the interview setting and participants' behaviors are consistently documented. Validation comes from nonverbal behaviors, which were often crucial for understanding the emotional and cognitive aspects of vaccine hesitancy (Patton, 2015).

Demographic Questionnaire

Literature Basis: Collecting demographic information was a standard practice in health-related qualitative research, as it enables the identification of variables that may influence the phenomenon under study (Patton, 2015). Regarding vaccine hesitancy, demographic factors such as age, years of practice, and professional setting likely influence pharmacists' attitudes (Dubé et al., 2015).

Content Validity: The demographic questionnaire will be based on existing research into factors associated with vaccine hesitancy. Its content validity will be established by reviewing relevant literature to ensure that all pertinent demographic variables are included and by conducting pilot testing with pharmacists to refine any unclear questions.

Establishing Content Validity

Content validity refers to how well the instruments measure what they were intended to measure and capture all relevant aspects of the phenomenon under investigation. Several strategies will be employed to ensure content validity in this study:

- **Expert Review:** My team of subject-matter experts, with extensive knowledge of vaccine hesitancy, public health, and pharmacy practice, will meticulously review the interview protocol and demographic questionnaire. Their expertise ensured that all relevant themes were comprehensively covered, thereby enhancing the credibility of my study.
- **Member Checking:** After transcription, participants will be invited to review their interview transcripts to ensure the utmost accuracy. This thorough process, guided by the principles of Lincoln & Guba (1985), will provide reassurance that their views were captured accurately, strengthening the credibility and validity of the data.
- **Triangulation:** Using multiple data sources—interviews, artifacts, and observation sheets—captures different perspectives. This methodological triangulation helps validate the findings and ensures that the data collected were rich and comprehensive (Creswell & Poth, 2018)

Sufficiency of Data Collection Instruments to Answer Research Questions

The sufficiency of the data collection instruments for answering the research questions lies in their ability to explore vaccine hesitancy among pharmacists comprehensively. Each instrument addresses a different aspect of the research questions:

- **Semi-structured interviews provide** deep insights into the personal experiences and factors influencing vaccine hesitancy.
- **Audio Recordings and Transcripts:** Ensure accuracy and completeness in capturing the participants' verbal expressions, which were crucial for understanding the complexity of vaccine hesitancy.
- **Observation Sheets:** These capture nonverbal cues and the interview context, adding depth to the verbal data.
- **Demographic Questionnaire:** Collects contextual data to explore potential demographic influences on vaccine hesitancy.
- **Artifacts:** Provide real-world examples of how vaccine hesitancy manifests in practice, offering tangible evidence of pharmacists' challenges.

By combining subjective narratives (interviews) and objective observations (field notes, artifacts), the instruments offer a multi-dimensional view that sufficiently addresses all research questions (Creswell & Poth, 2018).

Procedures For Recruitment, Participation, and Data Collection

For a research study examining pharmacists' hesitancy to receive the COVID-19 vaccine and its impact on their willingness to advise the public, there was a detailed description of data collection methods:

Data Collection Instrument: Survey

I collected demographic data from licensed pharmacists in urban regions in various healthcare settings (e.g., community pharmacies, hospitals, clinics). A single demographic survey was administered to each participant, taking approximately 5–10

minutes to complete. Responses were collected via an online survey platform (e.g., Qualtrics, SurveyMonkey), ensuring real-time data capture and secure storage. Paper-based surveys may be provided for later manual entry. If participant numbers fell short of expectations, recruitment would be extended through professional networks, state boards of pharmacy, and pharmacists' associations. After completing the survey, participants received a debriefing statement outlining the study's purpose and the handling of their data. There was no mandatory follow-up; however, participants could opt in for future surveys if they wished to provide further details later in the research process.

Data Collection Instrument: Semi-Structured Interviews

Data were collected from pharmacists who indicate hesitancy to receive the COVID-19 vaccine, identified through survey responses. The researcher conducting this study will collect the data. Each participant underwent one semi-structured interview, though follow-up interviews could be conducted if more in-depth data is required. Interviews lasted approximately 45–60 minutes per participant. Interviews were audio-recorded (with participants' consent) and later transcribed verbatim. Field notes were also taken to capture non-verbal cues or contextual details during the interview process. If not enough participants consented to interviews, additional efforts would include targeted recruitment via professional organizations, social media, and direct outreach to pharmacists who previously completed the survey but were undecided about participating in interviews. Upon completion of the interview, participants were thanked for their time and provided with a summary of the study's objectives. They also received information on where to find the study's results when they are published. Participants may be asked to

return for a follow-up interview to clarify their responses or provide additional context to the findings. However, this was optional; participants could refuse without consequence. A token of appreciation was given to each participant in the form of an Amazon card.

Pilot Study

A small pilot study was conducted as a preparatory step for primary data collection. The process was outlined as follows:

1. Upon receiving IRB approval for the pilot study, recruit and interview one participant who shares characteristics with, but was distinct from, the participants of the main study.
2. Submit the audio recording and interview transcript to the dissertation chair for review and feedback.
3. Conduct a debriefing session with the chair and potentially the second committee member to evaluate the effectiveness of the interview protocol.
4. Based on the outcomes of the first interview, either proceed with the main study or conduct an additional interview to gather further feedback before continuing.

Data Analysis Plan

For the study on pharmacists' hesitancy to receive the COVID-19 vaccine and its impact on their willingness to advise the public, here was a breakdown of how each type of data was connected to the research questions, along with coding procedures, software used for analysis, and the treatment of discrepant cases:

Survey Data

The survey collected only quantitative demographic data to describe the sample population, as all participants were assumed to be vaccine-hesitant. The collected data will include vital demographic variables, such as age, gender, and locale, to describe the participants. No quantitative data on attitudes, beliefs, or behaviors regarding the COVID-19 vaccine were reported beyond these demographics.

The demographic data were numerically coded for descriptive statistical analysis (e.g., age groups and gender distribution). Statistical software such as SPSS or R was used to perform basic descriptive statistics. No regression analysis or subgroup comparisons related to vaccine hesitancy was conducted, as the study assumes all participants share this characteristic.

Semi-Structured Interview Data

Interviews provided in-depth qualitative data on personal beliefs, experiences, and professional responsibilities. These data showed how pharmacists balance their hesitancy with their role as healthcare advisors. Interview transcripts were thematically coded using a grounded theory approach. Initial coding included line-by-line coding to capture critical phrases, experiences, or sentiments (e.g., ‘distrust of pharmaceutical companies,’ ‘pressure from patients’). This was followed by focused coding, which includes categories developed based on recurring themes (e.g., ‘ethical conflict,’ ‘trust in science,’ ‘community influence’). This was followed by axial coding, which identifies relationships between themes (e.g., hesitancy linked to specific sources of information or professional conflicts). NVivo, a powerful tool, was used to organize, code, and analyze

the interview data. The software's capabilities in developing categories, conducting thematic analysis, and visualizing connections between themes were instrumental in my research. Discrepant cases in interviews—where individual responses do not align with the dominant themes—will be treated as potential sources of new or unexpected insights. These cases were carefully analyzed to determine whether they represent genuine outliers or alternative perspectives that may have been overlooked. For example, an interviewee might express strong hesitancy due to religious beliefs, which could be a minority perspective, but was essential for understanding the diversity of hesitancy drivers.

Connection of Data and Cross-Analysis

Cross-analysis was conducted among participants to determine whether themes were emerging.

Issues of Trustworthiness

Credibility

Establishing credibility (i.e., internal validity) was a cornerstone of research. It was essential for ensuring the trustworthiness of the data collected, the interpretations made, and the conclusions drawn in a qualitative research study. Several strategies could enhance the credibility of my survey on pharmacists' hesitancy to receive the COVID-19 vaccine. These strategies, commonly used in qualitative research, will be carefully applied to my study to ensure the robustness of my findings.

- **Triangulation** involves using multiple data sources, methods, or researchers to validate findings. In this study, triangulation was achieved by member checking to clarify statements or data as needed, combining survey data and

semi-structured interviews, and ensuring. As Carter et al. (2019) explained, triangulation strengthens the validity of findings by cross-verifying data from different sources, reducing bias.

- **Member checks** involve validating findings with participants to ensure accuracy. After collecting interview or focus group data, participants will review preliminary findings or transcripts to confirm that their views have been accurately represented. Birt et al. (2016) noted that member checks were among the most effective strategies for ensuring research findings accurately reflect participants' intended meanings.
- **Data saturation** occurs when no new information or themes emerge from data collection, confirming that the topic has been sufficiently explored. This study will reach saturation when interviews and focus groups no longer reveal new themes regarding vaccine hesitancy among pharmacists. Hennink et al. (2017) emphasized that saturation was crucial for ensuring that findings were representative and comprehensive. I will determine saturation in consultation with my committee members.
- **Reflexivity** requires researchers to reflect on their biases and how these may influence the research. By keeping a reflexive journal, researchers could remain aware of how their preconceptions about healthcare and vaccination might shape their interpretation of the data. Darawsheh (2014) described reflexivity as a continuous process that enhances credibility by making researchers mindful of their potential biases.

The study could ensure credibility and trustworthiness by triangulation, member checks, data saturation, reflexivity, and peer debriefing, confirming that the research findings genuinely reflect participants' experiences and perspectives.

Transferability

Transferability (i.e., external validity) refers to how well a study's findings could be applied to other contexts or groups. Researchers must provide enough detail for others to assess whether the findings were transferable. Below were strategies for establishing transferability in studying pharmacists' COVID-19 vaccine hesitancy.

- **Thick description** provides detailed accounts of the research context, participants, and the phenomena under study. This enables readers to evaluate whether the findings might apply to other settings. In the study of pharmacists' hesitancy, thick description would include comprehensive details on participants' demographics (e.g., age, gender, experience), professional environments (e.g., community pharmacies, hospitals), and geographical differences (e.g., urban vs. rural areas). By providing this level of detail, readers could judge the applicability of the findings to other settings. Forero et al. (2018) highlighted the importance of thick descriptions in qualitative research to ensure that results can be meaningfully interpreted in different contexts.
- **Variation in participant selection** enhances transferability by including diverse participants from various backgrounds, settings, and experiences. In this study, participants would be selected from different professional roles

(e.g., community pharmacists, hospital pharmacists), regions (urban, suburban, and rural), and demographic groups (age, gender, race/ethnicity). This approach ensures that the findings were more broadly applicable, as Palinkas et al. (2015) noted, making the results transferable to other pharmacist populations.

By using thick descriptions and ensuring variation in participant selection, this study could establish transferability, thereby making the findings relevant across multiple settings.

Dependability

In qualitative research, dependability parallels reliability in quantitative studies. It ensures that the research process was consistent and could be replicated under similar conditions. To establish dependability, researchers will thoroughly document their methods and use multiple strategies to ensure the stability of their findings:

- An **audit trail** involves detailed documentation of the entire research process, from data collection to analysis. This ensures transparency and allows others to assess the consistency of the findings. In this study, an audit trail would include how participants were recruited, how data were collected (e.g., surveys, interviews), and how analysis procedures were applied. As Connelly (2016) noted, an audit trail enhances dependability by demonstrating that findings were grounded in the data.
- **Triangulation** ensures dependability by cross-checking findings using multiple data sources, methods, or researchers. This reduces the likelihood

that results were limited to a single perspective. Triangulation in this study could involve comparing survey data with insights from interviews and focus groups to confirm consistency across formats.

- **Reflexive journaling** helps researchers track how their biases and perspectives might influence the research. In this study, researchers will maintain reflexive journals to document their reflections throughout the research process, improving dependability by acknowledging the potential impact of their biases.
- The **code-recode strategy** involves coding the same dataset at different times to assess consistency. In this study, data will be initially coded and set aside before being recorded later, ensuring stable interpretations over time. This study used an audit trail, triangulation, reflexive journals, and the code-recode strategy to ensure the research process was transparent, well-documented, and dependable.

Confirmability

Confirmability is the qualitative equivalent of objectivity, ensuring that the study's findings reflect the data rather than the researcher's bias. Several strategies could help establish confirmability:

- **Reflexivity** involves researchers critically reflecting on how their biases may influence the research. In this study, reflexivity would involve researchers maintaining a reflexive journal to track their thoughts, decisions, and potential biases throughout the research process.

- An **audit trail** provides a detailed record of the research process, allowing others to trace how data was collected, analyzed, and interpreted. This ensures that findings were grounded in the data and not shaped by researcher bias.
- **Data triangulation** involves cross-checking data from multiple sources. In this study, triangulation would involve comparing survey, interview, and focus group findings to confirm consistency across data sets.
- **Member checking** ensures confirmability by allowing participants to validate the findings, confirming that their views have been accurately captured. Researchers will share summaries of the findings with participants to verify the accuracy of interpretations.

This study used reflexivity, audit trails, triangulation, and member checks to ensure that findings were grounded in the data and not influenced by researcher bias, thereby enhancing confirmability.

Ethical Procedures

I obtained Institutional Review Board (IRB) approval (03-03-25-1104669) before collecting or analyzing pilot and primary study data. To ensure the protection and ethical treatment of human research subjects.

Summary

This study employed a qualitative, phenomenological approach to explore vaccine hesitancy among pharmacists. A purposive sampling method was used to select participants who met the study's criteria. Demographic data were collected through surveys to describe the sample population. Following IRB approval, a pilot study was

conducted to refine the interview protocol and correct any potential logistical issues. The primary research involved semi-structured interviews to capture the lived experiences of vaccine-hesitant pharmacists, with thematic analysis applied to identify critical patterns and insights. Demographic information will be reported to describe the sample population. Section 3 will present the results and findings derived from the data collection and analysis.

Section 3: Presentation of the Results and Findings

Introduction

This study explored vaccine-hesitant pharmacists' perspectives and how their hesitancy affected their ability to educate, advise, and build trust with patients. It examined factors influencing hesitancy, the impact on communication, and evaluated strategies to mitigate hesitancy and enhance pharmacists' public health advocacy roles.

This section presents the study's results, beginning with an overview of the pilot study that informed subsequent data interpretation. Findings were organized by key themes identified during data collection and analysis, focusing on how vaccine-hesitant pharmacists articulated their perspectives. To support validity, evidence of trustworthiness was provided. The section concludes with a summary of significant results to introduce the subsequent discussion.

Pilot Study

The pilot study was conducted with two participants on September 19 and September 22. The first interview was held via Zoom, but because there was no built-in transcript, an external transcription tool was used. This interview was relatively brief, lasting approximately 15–20 minutes. Following the review, the dissertation chair recommended revisions to the interview instrument to allow for a more comprehensive data collection process. As a result, a “get to know you” section was added to build rapport, the closing language was revised to elicit more detailed responses, and questions were included to allow for follow-up and participant referrals.

After these revisions, a second pilot interview was conducted using Zoom's integrated tools, which provided a more streamlined process. However, the participant's speech was difficult to understand, sufficiently clear and precise to capture the intended meaning. This finding suggested that language proficiency may need to be considered a potential exclusion criterion to preserve data integrity.

The pilot study played a critical role in shaping the main study design by refining the interview protocol, improving data collection procedures, and identifying practical considerations for participant eligibility. No major revisions were made to the study protocol as approved by the IRB. Therefore, in consultation with the committee chair, the decision was made to proceed with the main study. These insights strengthened the study's trustworthiness and increased the likelihood of collecting rich, reliable data throughout the research phase.

Data Collection

A total of 20 participants were included in the study between September 23 and October 14, 2025. Data were collected through two primary instruments: a demographic survey and a semi-structured interview. Each participant first provided informed consent by replying to an email after receiving and reviewing the IRB-approved consent form. Upon confirmation of consent, participants were emailed a demographic survey to complete and return electronically (see Appendix B).

Following receipt of the completed demographic surveys, participants were scheduled for an individual virtual interview conducted via Zoom. Each interview was

held once per participant and lasted approximately 45–60 minutes, using the virtual format procedures.

All interviews were audio-recorded, and verbatim transcripts were produced to ensure the accuracy and integrity of the qualitative data. No video recordings were collected. Demographic survey data and interview transcripts were securely stored in electronic format for analysis.

Data saturation was achieved when no new themes, insights, or perspectives emerged from additional interviews. During data collection, each transcript was carefully reviewed and compared with prior interviews. This helped identify recurring ideas and patterns related to pharmacists' experiences with COVID-19 vaccine hesitancy. As the analysis progressed, similar statements were repeated, and previously established codes continued to emerge consistently. This indicated that the essence of the phenomenon had been fully captured. After several consecutive interviews yielded no new or varied themes, data collection was concluded. This point of saturation confirmed that the findings represented a comprehensive understanding of participants' lived experiences. It ensured the depth and completeness necessary for phenomenological inquiry.

One deviation from the original research design involved the planned use of observation sheets. Because data collection was limited to audio recordings of virtual interviews, nonverbal cues could not be observed or documented, resulting in the omission of this component. Additionally, participant recruitment initially progressed slowly, presenting challenges in obtaining adequate participation. However, this resulted

in a substantial influx of potential participants. Ultimately, the number of volunteers exceeded the study's capacity, and additional participants had to be declined.

Data Analysis

The data analysis followed an inductive phenomenological approach. Interview transcripts were analyzed using open coding to identify significant statements and recurring concepts that reflected pharmacists' lived experiences with COVID-19 vaccine hesitancy. This approach was consistent with phenomenological methods that emphasize deriving meaning from participants' descriptions of their experiences (Braun & Clarke, 2006; Creswell, 2013; Moustakas, 1994). Initial codes, such as side effects, studies, evidence-based information, misinformation, professional knowledge, and culture, were grouped into broader categories representing data, information, communication, knowledge, rollout, and beliefs. From these categories, five overarching themes emerged that captured the essence of participants' lived experiences: (a) a lack of long-term safety data, (b) a lack of comprehensive and accurate information, (c) a lack of thorough communication and training, (d) the speed at which the vaccine was rolled out, and (e) beliefs about decision-making. These themes revealed the tension pharmacists experienced between their personal uncertainty and their professional obligation to guide patients, the impact of both accurate and misleading information on their confidence, and the evolving nature of their perspectives as the pandemic progressed. No discrepant cases were found during the study.

Evidence of Trustworthiness

Throughout the data collection and analysis process, I employed several strategies to ensure the trustworthiness of the findings. To strengthen credibility, triangulation and member checking were used. Triangulation involved comparing participants' narratives and researcher reflections to confirm the consistency and authenticity of the emerging themes. Member checking further enhanced credibility by allowing participants to review and validate that the interpretations accurately reflected their lived experiences regarding COVID-19 vaccine hesitancy and their ability to advise the public. Data saturation was achieved once additional interviews produced no new insights or themes, confirming that the data fully captured the depth and breadth of pharmacists' perspectives.

Maintaining reflexivity was essential to ensure the findings were grounded in participants' experiences rather than influenced by my assumptions or beliefs about vaccination and professional responsibility. I engaged in ongoing reflection throughout the study, documenting thoughts and decisions in a reflexive journal to remain aware of personal bias. Transferability was supported by rich, thick descriptions of participants' experiences, professional roles, and practice settings, providing readers with sufficient context to determine whether the findings may apply to similar populations or environments. An audit trail was also maintained to record each stage of the research process—from participant recruitment and data collection to thematic analysis, ensuring transparency and contributing to dependability. Collectively, these strategies established the credibility, transferability, dependability, and confirmability of the study, resulting in

findings that authentically represent pharmacists' lived experiences with vaccine hesitancy and its influence on their professional practice.

Results

The purpose of this phenomenological study was to explore pharmacists' lived experiences with COVID-19 vaccine hesitancy and to understand how their perceptions influenced their ability to counsel the public. Data analysis revealed five interconnected themes that collectively illuminated participants' concerns, reasoning processes, and professional challenges. The following section presents these findings organized around the study's research questions and supported by the emergent themes. The five themes identified through the coding and categorization process are summarized in Table 1.

Table 1

Code, Categories, and Themes That Emerged From the Data

Code	Category	Themes
Studies Effects Evidence-based information	Data	Lack of long-term safety data
Misinformation Conflicting information Evidence based Different information Accurate information	Information	Lack of comprehensive and accurate information
Clear communication Professional communication Clinical knowledge Robust knowledge	Communication Knowledge	Lack of thorough communication and training
Quickness	Rollout	The speed at which the vaccine was rolled out
Cultural Religious	Beliefs	Beliefs making decisions

The demographic findings are shown in Table 2. Based on the survey data, 65% of participants identified as female and 35% as male. The sample was predominantly African American (70%), followed by smaller proportions identifying as White (5%), Asian (10%), Native American or Alaskan Native (5%), Latino (10%), and Native Hawaiian or Pacific Islander (2%). Participants reported an average of 6.4 years of professional experience in the field. The sample reflected a diverse range of educational backgrounds, including PharmD, bachelor's, and associate degrees. Participants also represented multiple professional settings, with a balanced distribution of hospital, community, and clinical pharmacy practitioners.

Table 2

Participants' Demographic Information

ID	Race/ethnicity	Gender	Education level	Years in practice	Pharmacy setting
P1	Native Hawaiian	Female	AA	2	Community
P2	Latino	Male	BS	4	Hospital
P3	Native American	Female	PharmD	10	Clinical
P4	African American	Male	AA	8	Community
P5	African American	Female	BS	7	Clinical
P6	African American	Female	PharmD	7	Hospital
P7	African American	Female	BS	4	Hospital
P8	Latino		PharmD	7	Clinical
P9	White	Male	AA	8	Clinical
P10	African American	Female	BS	9	Community
911	Asian	Male	AA	10	Community
P12	African American	Female	BS	2	Community
P13	African American	Female	AA	1	Clinical
P14	Asian	Male	PharmD	7	Hospital
P15	African American	Female	PharmD	7	Clinical
P16	African American	Male	BS	7	Community
P17	African American	Male	AA	8	Hospital
P18	African American	Female	BS	7	Community
P19	African American	Female	AA	6	Clinical
P20	African American	Female	PharmD	7	Hospital

Research Question 1

The primary research question was as follows: What are the lived experiences of pharmacists that make them vaccine-hesitant?

The lived experience of making vaccination decisions emerged as a complex, reflective process shaped by risk assessment, professional identity, and ethical responsibility. Pharmacists described carefully weighing scientific evidence against personal concerns, often navigating uncertainty while remaining mindful of their professional obligations. The following themes illustrate how these internal deliberations unfolded.

Theme 1: Lack of Long-Term Safety Data

A prominent concern among participants was the absence of long-term safety data. Over half of the pharmacists expressed hesitation rooted in the limited duration of available evidence at the time of vaccine release. Participants emphasized that, unlike traditional vaccine development timelines, the COVID-19 vaccines were introduced without the extended follow-up data they were accustomed to evaluating in their professional roles.

For example, P10 shared, “When the vaccine first came out, it was a hard decision to vaccinate or not because we did not have the usual long-term safety data that comes along with a vaccine.” Similarly, P19 and P16 stated that “long-term safety data were missing.” P3 expressed deeper concern, noting, “Since there was no long-term safety data, even though I understood the circumstances we were in, it troubled me that we did not know the long-term effects of the vaccine.”

These reflections reveal that pharmacists' hesitancy was not rooted in a rejection of science but rather in their professional training, which prioritizes longitudinal safety monitoring and evidence-based evaluation.

Theme 2: Lack of Comprehensive and Accurate Information

In addition to concerns about long-term data, approximately one-third of participants described difficulty navigating inconsistent and sometimes conflicting information. Pharmacists reported uncertainty about the credibility and accuracy of information circulating through traditional media, social media, and even professional channels.

P12 explained, "It was hard to know what information was true since we received differing information from multiple sources like the media and social media." P5 and P6 echoed this sentiment, stating that "there was a lot of misinformation out there and it was hard to know what to trust."

Participants described engaging in extensive self-directed research, comparing emerging studies, reviewing primary literature, and monitoring updates from public health agencies. This active information-seeking behavior underscores their commitment to informed decision-making, even amid rapidly evolving and sometimes contradictory guidance.

Theme 4: Speed at Which the Vaccine Was Rolled Out

Closely connected to concerns about data and information accuracy was apprehension regarding the unprecedented speed of vaccine development and rollout.

About one-third of participants expressed discomfort with the accelerated timeline, despite recognizing the urgency of the global pandemic.

P7 remarked, “I understand we are under a pandemic, but the speed at which the vaccine was developed was too quick.” P14 and P20 shared similar perspectives, stating that “the vaccine was developed too quickly.”

While pharmacists acknowledged the extraordinary circumstances of the public health emergency, the rapid pace challenged their expectations of the traditional vaccine development process, prompting internal deliberations.

Theme 5: Influence of Personal Beliefs

Although less frequently discussed, personal beliefs also played a meaningful role in decision-making for a small subset of participants. Represented by four pharmacists, this theme highlighted that vaccination decisions were not made solely on clinical evidence; rather, they were filtered through personal frameworks of trust, culture, religion, and professional expectations.

P15 stated, “I use my culture and my religion to help me make personal decisions,” identifying these beliefs as a primary driver in delaying vaccination. Similarly, P4 shared that “my beliefs, both of the cultural and religious variety, help me make personal decisions.”

This theme illustrates that even among healthcare professionals, decision-making is multifaceted and influenced by deeply held values that coexist alongside scientific reasoning.

Collectively, Themes 1, 2, and 4 informed pharmacists' internal deliberations, revealing a shared struggle to balance professional responsibility with personal uncertainty. Theme 5 further emphasized that these decisions were deeply introspective, shaped not only by clinical evidence but also by personal belief systems. Together, these findings illuminate the nuanced and lived experience of vaccine hesitancy among pharmacists during the COVID-19 pandemic.

Research Question 2

The second research question digs into how vaccine-hesitant pharmacists weigh the risks and benefits of the COVID-19 vaccine: What are pharmacists' perceived severity of the COVID-19 vaccine side effects? Analysis of the interview data indicated that pharmacists' hesitancy stemmed from multiple, overlapping sources of uncertainty. These concerns reflected both professional knowledge and personal appraisal of available evidence.

Theme 1: Lack of Long-Term Safety Data

Across interviews, participants consistently expressed apprehension about the lack of long-term data on COVID-19 vaccines. With regards to long-term safety data, P2 had concerns about the lack of data, "time limited for people, and it was, um, a long-term safety data was actually limited, so I think it was something we had, um, we had to learn, like, you know, take it slow down." P11 also said there was, "limited safety data at the start." Pharmacists reported that, despite understanding the scientific processes underlying vaccine development, they remained uncomfortable with the limited

longitudinal evidence. For many, this perceived gap in safety data heightened their caution and significantly contributed to their hesitancy.

Theme 2: Lack of Comprehensive and Accurate Information

Participants also emphasized that, during the early phases of the vaccine rollout, the information they received was fragmented, inconsistent, or rapidly changing. Several pharmacists noted that official communication channels did not provide sufficient depth or clarity for them to feel confident in evaluating the vaccine's overall risk–benefit profile. P20 had strong feelings about the information, “Before making my own decisions, um, I also remember feeling overwhelmed by the flood of different information that came through during that time.” P11 had a similar sentiment, saying, “now, in the early months, uh... There was a lot of mixed information, stories, spreading through social media conversations.” This contributed to uncertainty and made some pharmacists reluctant to be early adopters.

Theme 4: Speed at Which the Vaccine Was Rolled Out

Pharmacists frequently cited the unprecedented speed of development and emergency authorization as significant contributors to their hesitancy. Regarding the amount of time it took to be rolled out, P9 said, “my initial concerns about COVID-19 were the same as anything, saying it was put out too quickly and was developed and unapproved. Which made me wonder about the thoroughness of the testing process.” P13 had a similar thought, and they said, “the rapid development was of great concern to me.” While participants understood the pandemic's contextual urgency, they described

difficulty reconciling the accelerated timeline with their expectations for standard vaccine trial procedures. This perception of “too fast, too soon” fueled feelings of skepticism.

Research Question 3

The third research question explored the connection between pharmacists’ personal hesitancy and their professional role in counseling patients: Do pharmacists’ beliefs and attitudes about the COVID-19 vaccine translate into behaviors when interacting with the public?

Theme 3: Lack of Thorough Communication and Training

Pharmacists reported that gaps in training and communication from public health agencies affected their confidence when advising patients. Without clear and timely information, hesitant pharmacists felt ill-equipped to address patient concerns and often deferred to general statements rather than offering detailed guidance. A small number of participants shared that the lack of thorough communication and training was a concern. P19 had concerns about communication or lack thereof, “or, you know, about things. So, I think if there were clear communication, it would go a long way”. According to P6 and P16, “training on how to separate personal from professional beliefs would help.” Participants described this as professionally uncomfortable, as they perceived an expectation to serve as trusted vaccine experts despite feeling insufficiently informed themselves.

Theme 5: Beliefs Making Decisions

Participants explained that their personal beliefs—particularly about scientific rigor, bodily autonomy, and institutional credibility—influenced how they navigated

patient interactions. According to P1, when it came to how they were able to do their job even though they were hesitant, “I approach it with transparency—offering clear evidence in support of information. You know, why do you respect your concerns and personal beliefs? So, my goal was to empower them to make informed decisions.” P14 had a similar thought when they said, “separating your personal beliefs from professional responsibility was hard. However, it was our duty to do our jobs still.” Although most emphasized their aim to remain neutral and evidence-based in counseling, their underlying hesitancy shaped the tone and depth of their recommendations. Some pharmacists reported avoiding proactive vaccine promotion, while others focused heavily on encouraging patients to “make the best decision for themselves” without offering strong endorsements. These approaches demonstrate how personal beliefs subtly guide professional communication practices.

Integration Across Research Questions

When viewed together, the five themes render a consistent depiction of pharmacists’ experiences. Each theme appeared across multiple research questions, suggesting that pharmacists’ hesitancy, communication challenges, and decision-making processes were interdependent rather than isolated. Their concerns about long-term data, information quality, and rapid vaccine development informed not only their personal choices but also their ability to counsel others. Similarly, their individual beliefs operated as a lens through which they interpreted evidence and shaped their professional behaviors. Together, these findings contribute to a deeper understanding of how vaccine

hesitancy manifests within a highly trained health professional group and how it influences public-facing practice.

Summary

In short, the findings addressed each research question by revealing that pharmacists' vaccine hesitancy was driven primarily by concerns about limited long-term safety data, inconsistent or incomplete information, insufficient communication and training, and the rapid pace of vaccine development. These factors shaped their personal decision-making and directly influenced their professional interactions with patients, often leading to cautious or neutral counseling. The themes that emerged from the data—ranging from uncertainty about scientific evidence to the role of personal beliefs—illustrated the complex interplay between pharmacists' professional obligations and their lived experiences during the COVID-19 pandemic. Collectively, these insights deepen the understanding of how vaccine hesitancy manifests among health professionals and how it may affect public health communication.

The following section builds on these findings by presenting the field-based products developed from this research, including the policy brief and applied recommendations designed to support organizational leaders, policymakers, and public health practitioners. Section 4 translates the study's evidence into actionable strategies, demonstrating how the results could inform communication practices, training structures, and policy decisions to improve vaccine confidence among pharmacists and enhance public health outcomes.

Section 4: Application to Professional Practice and Implications for Social Change

Introduction

The purpose of this phenomenological qualitative study was to explore pharmacists' hesitancy to receive the COVID-19 vaccine and how this hesitancy influenced their ability to advise the public. The study sought to understand pharmacists' lived experiences as they navigated personal beliefs, professional responsibilities, and public expectations during the pandemic. This research was conducted to provide deeper insight into the factors shaping pharmacists' vaccine decision-making and communication practices, to inform future public health strategies, and enhance the effectiveness of pharmacist-led vaccine education.

Interpretation of the Findings

The findings of this study both confirm and extend existing knowledge in the discipline. Consistent with prior research outlined in Section 1, participants' concerns about the lack of long-term safety data, rapid vaccine development, and inconsistent information mirror patterns previously documented among healthcare workers during the COVID-19 pandemic.

Theme 1: Lack of Long-Term Safety Data (Perceived Risk and Perceived Barriers)

The lack of long-term safety data was of great concern to participants, especially regarding the COVID-19 vaccine. Pharmacists indicated that uncertainty regarding potential long-term adverse effects increased their perception of risk and served as a barrier to confidently recommending vaccination to patients.

Interpretation

Within the HBM, perceived risk and perceived barriers were key predictors of health-related behaviors (Champion & Skinner, 2008). This finding was consistent with previous research indicating that uncertainty about long-term safety contributes significantly to vaccine hesitancy among healthcare professionals (Dubé et al., 2015). Pharmacists' emphasis on long-term medication safety makes this concern particularly salient.

Implications

Providing ongoing safety surveillance data and transparent communication regarding long-term vaccine monitoring may reduce perceived risk and lower barriers to vaccine advocacy.

Theme 2: Lack of Comprehensive and Accurate Information (Perceived Barriers and Perceived Benefits)

Participants reported difficulty accessing timely, consistent, and comprehensive information regarding COVID-19 vaccines. Conflicting information from multiple sources limited pharmacists' ability to clearly articulate vaccine benefits to patients.

Interpretation

According to the HBM, insufficient or unclear information increases perceived barriers while weakening perceived benefits (Champion & Skinner, 2008). This finding aligns with the literature, which demonstrates that inconsistent messaging contributes to healthcare provider hesitancy and reduced vaccine promotion (Christodoulakis et al., 2024).

Implications

Centralized, evidence-based informational resources may enhance pharmacists' understanding of vaccine benefits and support more transparent patient communication.

Theme 3: Lack of Thorough Communication and Training (Self-Efficacy and Cues to Action)

Participants identified limited formal training and insufficient organizational communication as factors that reduced their confidence in discussing COVID-19 vaccination with patients.

Interpretation

Self-efficacy and cues to action were critical HBM constructs that influence whether individuals engage in health-related behaviors (Champion & Skinner, 2008). This theme aligns with existing evidence indicating that targeted training increases healthcare providers' confidence and likelihood of recommending vaccines (Ciardi et al., 2021).

Implications

Enhanced training programs and consistent organizational communication may improve pharmacists' self-efficacy and serve as cues to action for vaccine advocacy.

Theme 4: Speed at Which the Vaccine Was Rolled Out (Perceived Risk and Perceived Severity)

Participants expressed concern that the rapid development and emergency authorization of COVID-19 vaccines increased the potential for unknown risks, contributing to hesitancy.

Interpretation

Within the HBM framework, heightened perceived risk and perceived severity could negatively influence acceptance of preventive behaviors (Champion & Skinner, 2008). This finding was consistent with studies indicating that accelerated vaccine timelines increase skepticism among healthcare professionals (Dror et al., 2020).

Implications

Educational efforts that clearly explain the scientific rigor and regulatory oversight involved in accelerated vaccine development may reduce perceived risk and improve acceptance.

Theme 5: Beliefs Influencing Decision-Making (Modifying Factors)

Participants described how personal beliefs, prior experiences, and values influenced their vaccination decisions and shaped their interactions with patients.

Interpretation

The HBM recognizes individual beliefs and experiences as modifying factors that influence health behaviors (Champion & Skinner, 2008). This finding supports existing research demonstrating that personal belief systems significantly shape healthcare providers' vaccination behaviors (Christodoulakis et al., 2024).

Implications

Interventions that acknowledge personal beliefs while reinforcing professional responsibilities may help align individual attitudes with public health goals.

Studies have similarly reported that uncertainty about emerging scientific evidence can contribute to hesitancy, even among medically trained professionals,

confirming the broader trend that knowledge alone does not guarantee vaccine acceptance (Dror et al., 2020; Dubé et al., 2015). However, this study extends the literature by offering a nuanced, phenomenological account of how pharmacists specifically experience and negotiate these uncertainties within the context of their dual identities as clinicians and vaccine recipients. Unlike much of the existing research that aggregates healthcare workers into a single category, these findings highlight pharmacists' unique role as accessible medication experts and how their hesitancy may subtly influence public-facing vaccine communication.

Interpreted through the study's conceptual framework, the HBM, the findings underscore the significance of individual meaning-making processes in shaping professional behavior. When examined through the HBM, the findings indicate that perceived risks, barriers, self-efficacy, cues to action, and individual beliefs influence pharmacists' vaccine hesitancy. Addressing these constructs through targeted education, improved communication, and institutional support may strengthen pharmacists' confidence and effectiveness in vaccine recommendation practices, thereby supporting positive public health outcomes. Pharmacists' descriptions of evaluating evidence, questioning information sources, and relying on personal beliefs align with theoretical perspectives that emphasize the role of lived experience, perceived credibility, and risk appraisal in decision-making. The themes also illuminate how structural factors—such as inadequate training, communication gaps, and institutional messaging—intersect with individual cognition and emotion, reinforcing the framework's assertion that personal and contextual influences were inseparable in shaping health-related behaviors. Importantly,

interpretations remain bounded by the data. While the study reveals how pharmacists made sense of their hesitancy and how this affected their counseling practices, it does not claim predictive generalizability or attempt to infer outcomes beyond the participants' described experiences. Instead, the findings contribute a grounded, experience-based understanding that enriches disciplinary knowledge and offers a foundation for future inquiry.

Limitations of the Study

Despite efforts to ensure rigor, several limitations to trustworthiness emerged during the study. Because data collection relied solely on audio-recorded interviews, the inability to observe participants' nonverbal cues may have limited the depth of interpretation and contextual understanding. Additionally, although data saturation was achieved, participation was voluntary, which may have led to self-selection bias—pharmacists with strong opinions about vaccination may have been more inclined to participate. My role as the primary instrument for data collection and analysis also introduced the potential for interpretive bias, despite the use of reflexivity and an audit trail to mitigate its effects. Furthermore, the study's findings reflect the experiences of a specific group of pharmacists within a particular timeframe and context, which may limit transferability to other settings or populations. While these limitations do not undermine the study's overall trustworthiness, they provide important context for interpreting the scope and applicability of the findings.

Several strategies were employed to mitigate these limitations and strengthen the study's trustworthiness. Reflexivity was maintained through ongoing self-reflection and

journaling, allowing me to identify and bracket personal assumptions that could influence data interpretation. Member checking provided participants with the opportunity to review and validate the accuracy of the findings, ensuring that interpretations authentically reflected their experiences. Triangulation of data sources and iterative review of codes and categories helped reduce potential bias and enhance the credibility of the analysis. The use of rich, thick description and the maintenance of an audit trail further supported transferability and dependability by providing transparency and enabling readers to evaluate the applicability of the findings to other contexts. Collectively, these measures addressed the study's inherent limitations and reinforced the trustworthiness of the conclusions.

Recommendations

Based on the strengths and limitations of the current study, several directions for future research were warranted. Because this study relied on audio-recorded interviews without observational data, future research should incorporate methods that allow exploration of non-verbal communication—such as in-person interviews or video-based observations—to deepen understanding of how pharmacists express and experience vaccine-related hesitancy. Additionally, given the study sample's limited size and recruitment fluctuations, subsequent studies may employ purposive or stratified sampling strategies to examine whether differing practice settings, levels of experience, or demographic factors influence hesitancy trends.

The literature in Section 1 highlights the complexity of vaccine confidence and the professional responsibilities of pharmacists. Therefore, further research could

examine specific organizational and environmental factors that support or hinder pharmacists' ability to provide evidence-based vaccine counseling. Studies focusing on targeted interventions, such as educational modules or communication-skills training, may also be beneficial to assess how improvements in knowledge or confidence translate into patient interactions.

Importantly, future research should remain within the scope of the present study by continuing to focus on pharmacists' perspectives rather than expanding prematurely to patient or physician populations. By building on current findings and established literature, subsequent inquiries could refine the understanding of pharmacist hesitancy and develop more effective, practice-informed strategies to enhance public health communication and vaccination uptake.

Public Health Practice and Field-Based Products

Overall, the recommendations for public health practice emphasize the need to strengthen support systems that enhance pharmacists' confidence, competence, and capacity to engage in effective vaccine communication. By improving access to evidence-based training, fostering organizational environments that encourage open dialogue about professional concerns, and integrating pharmacists more fully into vaccination policy and outreach efforts, public health practitioners could help ensure that pharmacists were equipped to serve as trusted, knowledgeable vaccine advocates. These practice-oriented improvements not only address gaps identified in the current study but also contribute to broader efforts to increase vaccine acceptance and promote health equity within the communities pharmacists serve.

To translate the study's insights into actionable guidance for decision-makers, I developed a Policy Brief Memo that synthesizes the key findings and outlines targeted recommendations to strengthen pharmacists' vaccine communication practices. This field-based product was designed to support policymakers, organizational leaders, and public health practitioners in applying the study's evidence to real-world settings. The full Policy Brief Memo is included in Appendix C for further reference.

To further translate the study's findings into actionable guidance for practice, I developed an Executive Summary titled "Considerations for Program Development and Implementation Strategies." This field-based product distilled the research's key insights into practical recommendations to support organizational leaders, public health practitioners, and policymakers in designing effective interventions to strengthen pharmacists' vaccine communication and confidence. The full executive summary is included in Appendix D for reference.

Positive Social Change

At the individual and organizational levels, this study's findings suggest opportunities for meaningful social change by enhancing pharmacists' confidence and effectiveness as public health communicators. By understanding the personal and professional factors contributing to vaccine hesitancy, pharmacists could engage in self-reflection and professional development that improves their ability to provide evidence-based information to patients. Within pharmacy organizations, leadership could use these insights to design continuing education programs, peer discussions, and supportive workplace policies that encourage open dialogue about vaccine concerns. These changes

could foster an environment where pharmacists feel both informed and empowered to address public health questions confidently, ultimately improving patient education and trust.

At the societal and policy levels, the study's findings could inform broader public health strategies and communication frameworks without exceeding the study's scope. Health agencies, professional pharmacy associations, and policymakers could use this knowledge to strengthen vaccination outreach efforts by incorporating pharmacists' perspectives into planning and implementation. Understanding the barriers and motivations that influence pharmacists' vaccine decisions could help shape policies that promote transparent communication, reduce misinformation, and reinforce the pharmacist's role as a frontline public health advocate. While these implications remain within the study's boundaries, they collectively advance public trust, informed decision-making, and improved health outcomes across communities.

Conclusion

In reflection, this study offers valuable insight into the complex relationship between pharmacists' personal vaccine hesitancy and their professional responsibility to advise the public. By exploring these lived experiences, the research illuminates how internal beliefs, workplace culture, and societal influences converge to shape pharmacists' confidence and communication practices. The findings not only contribute to the understanding of vaccine hesitancy within the pharmacy profession but also provide a foundation for developing strategies that foster informed, empathetic, and evidence-based public health communication. Moving forward, this study serves as a

starting point for continued dialogue, education, and research to strengthen pharmacists' roles as trusted healthcare advocates—ultimately supporting a more informed and health-conscious society.

This study demonstrated mastery and synthesis of multiple DrPH foundational and concentration-specific competencies through its design, implementation, and analysis. The project was developed as a qualitative phenomenological study to explore pharmacists' hesitancy to receive the COVID-19 vaccine and how this influenced their ability to advise the public. This approach directly aligned with the competency of designing a research project to address a public health issue, as it provided an in-depth understanding of a timely and significant problem affecting healthcare communication and vaccine uptake. In the analytic process, the study applied and evaluated the strengths and limitations of relevant public health theories and models, such as the HBM and the theory of planned behavior, to interpret pharmacists' decision-making processes. These frameworks helped contextualize the personal, professional, and social influences shaping vaccine hesitancy while also acknowledging their limitations in capturing complex, evolving beliefs during a global health crisis.

Ethical integrity was maintained throughout the study, demonstrating competency in analyzing ethical issues in the design and conduct of public health research. Participants provided informed consent, confidentiality was strictly protected, and reflexivity was practiced by minimizing researcher bias and ensuring respectful representation of participants' experiences. The competency of communicating public health science to diverse stakeholders was demonstrated through the translation of

findings into clear, accessible insights that could inform public health practitioners, pharmacy leaders, and policymakers, each with varying levels of health literacy. Finally, by identifying opportunities for targeted education, institutional support, and policy adjustments, the study addressed the competency of proposing public health policy that fosters positive social change. Specifically, the findings highlight how empowering pharmacists through training and organizational communication strategies could strengthen public vaccine confidence, contributing to improved health outcomes and community resilience.

In summary, the successful completion of this study reflects the integration and practical application of DrPH foundational and program-specific competencies, demonstrating both scholarly and professional growth. Through the design and execution of a qualitative phenomenological project, I applied research skills to address a pressing public health issue while maintaining ethical rigor and methodological integrity. The analysis and interpretation of pharmacists' experiences revealed meaningful insights into the interplay between personal belief, professional responsibility, and public trust—illustrating the value of theory-informed, ethically sound, and culturally sensitive research. Communicating these findings to diverse audiences further strengthened my ability to translate public health science into actionable knowledge that supports evidence-based decision-making and health policy. Ultimately, this study not only advanced understanding of pharmacists' roles in promoting vaccine confidence but also reinforced my capacity as a public health practitioner to lead initiatives that inspire

positive social change and improve health outcomes at both the organizational and community levels.

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Appendix A: Participant Interview Guide

Semi-Structured Phenomenological Interview Guide: Vaccine-Hesitant Pharmacists

Introduction:

“Thank you for participating in this interview. This conversation aims to understand your experiences and perspectives as a pharmacist regarding COVID-19 vaccination. Your insights will help us understand how vaccine hesitancy may impact your professional practice. Please feel free to share openly. Your identity will remain confidential.”

Background and Personal Experience

1. **Can you tell me a little about your role as a pharmacist and how long you have been in practice?**
 2. **What are your thoughts and feelings about the COVID-19 vaccine, both personally and professionally?**
 - (Follow-up: When did you start having these concerns, if any?)
 3. **Can you share any personal experiences that influenced your decision to hesitate or delay receiving the COVID-19 vaccine?**
-

Attitudes and Beliefs

4. **What are the primary reasons or concerns contributing to your hesitancy regarding the COVID-19 vaccine?**
 - (Follow-up: Have these concerns evolved over time?)
 5. **How do you balance personal beliefs about vaccines with your professional responsibilities to your patients and the community?**
-

Professional Practice and Patient Care

6. **How do your views on the COVID-19 vaccine impact patient interactions, especially when they ask for vaccine-related advice?**
 - (Follow-up: How do you approach patient questions about vaccine safety and efficacy?)
7. **Do you feel your vaccine hesitancy affects your ability to advise patients objectively? Why or why not?**
8. **Can you describe a situation where you had to discuss vaccines with a patient, despite your hesitancy? How did you navigate that conversation?**

Pharmacy Context**9. Do you think the region or community you practice in affects your decision-making regarding vaccines, personally and as a pharmacist?**

- (Follow-up: Are there any local or regional factors influencing vaccine decisions for yourself or your patients?)

Future Considerations**10. What could help pharmacists like yourself overcome vaccine hesitancy?**

- (Follow-up: Are there any resources or information that could change your perspective?)

Closing:

“Thank you for sharing your experiences. Is there anything else you would like to add regarding your views on COVID-19 vaccines or your experiences as a healthcare provider?”

Appendix B: Demographic Questionnaire

Section 1: Basic Demographics**1. How old were you on your last birthday:**

- Please add only whole number: _____
- Prefer not to say

2. Gender:

- Male
- Female
- Non-binary
- Prefer not to say

3. Race/Ethnicity:

- White
- Black or African American
- Hispanic or Latino
- Asian
- Native American or Alaska Native
- Native Hawaiian or Pacific Islander
- Multiracial
- Other (please specify): _____
- Prefer not to say

4. Marital Status:

- Single
- Married
- Divorced
- Widowed
- Prefer not to say

Section 2: Educational and Professional Background**6. Highest Level of Education Completed:**

- Associate's degree in pharmacy
- Bachelor's degree in pharmacy
- Doctor of Pharmacy (Pharm.D.)
- Prefer not to say

7. How many years have you worked as a Pharmacist:

- Please add a whole number: _____
- Prefer not to say

8. Primary Pharmacy Setting:

- Community Pharmacy
- Hospital Pharmacy
- Clinical Pharmacy
- Other (please specify): _____
- Prefer not to say

Section 3: Socio-Economic Information**9. Household Income (annual):**

- Please add your income number _____
- Prefer not to say

10. Type of Area Where You Live:

- Urban
- Suburban
- Rural

11. Employment Status of Spouse/Partner (if applicable):

- Employed full-time
- Employed part-time
- Unemployed
- Not applicable

Appendix C: Field-Based Product 1 – Policy Brief Memo

Title: *Strengthening Pharmacist Vaccine Communication Through Enhanced Training and Evidence-Based Support*

Introduction

Pharmacists play a vital role in public health, yet vaccine hesitancy among them hampers effective counseling and public confidence. This memo recommends prompt integration of a structured, evidence-based communication and training program for pharmacists.

Implementing such a program will enhance their confidence, consistency, and effectiveness in vaccine discussions, which was crucial given pharmacists' critical position in national immunization and public health messaging.

Scope of the Problem

Vaccine hesitancy among pharmacists reduces their willingness to recommend vaccines and the quality of information they share. This affected pharmacy staff, healthcare systems, and communities seeking trusted guidance (World Health Organization, 2023).

Hesitancy stems from safety concerns, inconsistent information, rapid rollouts, and insufficient institutional communication. Without targeted support, this may reduce vaccine uptake and worsen the spread of misinformation.

Current Approaches

Existing strategies—primarily general messaging and optional training—lack depth, consistency, and a specific focus on pharmacists. These programs were rarely tailored to the profession, and communication from health agencies during COVID-19 was

fragmented and subject to change (Brown & Green, 2020). As a result, pharmacists may give cautious or neutral recommendations, undermining public health approaches due to gaps in knowledge, confidence, and counseling skills.

Proposed Program or Policy

This memo recommends a **standardized, evidence-based communication and training program** for pharmacists. It will include (1) clinical vaccine safety and efficacy summaries, (2) structured risk communication and counseling training, and (3) a rapid-response system for timely public health updates. This targeted, low-cost approach will strengthen pharmacists' confidence and improve public trust.

Major Constituencies

Supporters include public health agencies, pharmacy associations, schools, and community organizations that sought to improve vaccination rates (Aqel et al., 2023). Opposition could arise over potential administrative burdens or costs. Building support will require underscoring the program's scalability, low cost, and clear connection to pharmacists' roles, with collaborative partnerships to address concerns and drive adoption.

Conclusion

A structured communication training program equips pharmacists to address vaccine hesitancy and advocate effectively. Enhancing pharmacists' knowledge, confidence, and patient communication will improve immunization rates and community health.

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Appendix D: Field-Based Product 2 – Executive Summary: Considerations for Program
Development and Implementation Strategies

Pharmacists play a critical role in vaccination efforts. However, this study's findings demonstrate that COVID-19 vaccine hesitancy among pharmacists significantly affected their confidence and their ability to deliver consistent, evidence-based vaccine counseling. Concerns about limited long-term safety data, inconsistent information from public health agencies, rapid vaccine development timelines, and insufficient communication and training contributed to professional uncertainty. These factors highlight the need for targeted programmatic and policy responses to strengthen pharmacists' communication capabilities and trust in public health guidance.

A strategic development and implementation approach should prioritize three key areas: (1) evidence-based educational support, (2) structured communication training, and (3) timely, transparent public health messaging systems. Program development should begin with a comprehensive assessment of pharmacists' information needs, preferred communication formats, and the barriers they experience during rapidly evolving public health crises. Implementation strategies should include creating accessible clinical summaries, standardized counseling tools, and real-time update systems that reduce information gaps and enhance pharmacists' decision-making confidence.

Sustainable implementation will require collaboration among pharmacy associations, public health agencies, employers, and academic partners. Training should be embedded into routine professional development to ensure consistency across pharmacy settings. Additionally, stakeholder engagement plans should include

mechanisms for pharmacists to voice concerns, provide feedback, and participate in continuous improvement processes. These strategies not only address current gaps identified in the study but also support long-term capacity building within the pharmacy workforce.

Appendix E: Field-Based Product 3 – Health Belief Model

Concept	Definition	Potential Change Strategies
Perceived Susceptibility	Belief in the chance of getting a condition	Provide pharmacists with updated epidemiological briefings showing COVID-19 infection risks among healthcare workers. Develop case-based learning modules featuring stories of pharmacists affected by COVID-19 or who faced risks due to low vaccination rates. Present data illustrate the likelihood of exposure in pharmacy settings due to high patient contact.
Perceived Severity	Beliefs about the severity of a condition and the consequences	Share real-world examples of morbidity and long-term complications from COVID-19 to reinforce the seriousness of infection outcomes. Provide patient scenarios demonstrating how pharmacist hesitancy could influence community vaccination behavior and disease spread. Reinforce the clinical responsibilities pharmacists hold during public health emergencies.
Perceived benefits	Beliefs about taking action that could have good results.	Create infographics highlighting improved patient trust, higher adherence rates, and reduced misinformation when pharmacists deliver confident vaccine counseling.

		Educate pharmacists on how vaccination protects them, their families, and their colleagues, reducing workplace disruptions. Promote professional incentives, such as continuing education credits or recognition programs, for participating in vaccine communication training.
Perceived barriers	Beliefs about the material and psychological costs of acting	Create infographics highlighting improved patient trust, higher adherence rates, and reduced misinformation when pharmacists deliver confident vaccine counseling. Educate pharmacists on how vaccination protects them, their families, and their colleagues, reducing workplace disruptions. Promote professional incentives, such as continuing education credits or recognition programs, for participating in vaccine communication training.
Cues to action	Anything that could activate the readiness to change	Implement regular evidence-based email alerts, mobile push notifications, or brief video messages summarizing new vaccine research. Use pharmacy management systems to deliver automated reminders encouraging

		<p>completion of vaccine training modules. Encourage pharmacy leadership to reinforce vaccination through staff meetings, posters, and daily huddles.</p>
Self-efficacy	Confidence in one's ability to act	<p>Provide hands-on role-playing workshops in which pharmacists practice responding to common vaccine myths and patient concerns. Create short "communication scripts" and quick-reference counseling guides. Develop mentorship or peer reflection groups where hesitant pharmacists could openly discuss their concerns and learn from more confident colleagues. Offer step-by-step modules that break down vaccine information into manageable learning components.</p>

FACT SHEET

Enhancing Pharmacist Preparedness for Vaccine Counseling

Background

Pharmacists play a critical role in public health, yet some express hesitancy regarding vaccination. Key concerns include uncertainty about long-term safety data, rapid vaccine development timelines, gaps in communication, and limited training.

Why This Matters

Pharmacists' confidence affects patient trust, counseling quality, community vaccine uptake, and emergency response readiness.

Program Development Recommendations

- Standardized vaccine communication curriculum
- Ongoing professional development workshops
- Centralized information hub
- Peer discussion and reflection groups
- Structured managerial support

Implementation Strategies

- Integrate training into workflow
- Partner with pharmacy boards and public health agencies
- Use multi-channel communication
- Pilot-test with small pharmacist groups
- Evaluate and adjust regularly

Expected Impact

- Improved vaccine communication and literacy
- Increased patient confidence and acceptance
- A more resilient and informed pharmacy workforce

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