

Research Paper

# Assessing the willingness of community pharmacists to test–treat–immunize during the COVID-19 pandemic in Puerto Rico

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## Abstract

**Objective** The objective of this study was to assess community pharmacists' willingness to test, treat and immunize for COVID-19 in Puerto Rico.

**Methods** In this cross-sectional study, a 37-item survey was distributed via email and social media in May 2020 through REDCap online software. All licensed community pharmacists in Puerto Rico ( $N = 1200$ ) were invited to complete the survey. Retired community pharmacists were excluded. Analysis of frequencies and chi-square tests were performed to evaluate the willingness to test, treat and immunize for COVID-19 and their associations with sociodemographic variables.

**Key findings** The survey response rate was 26% (314/1200). Subjects' mean age was 42 ( $\pm 13$ ), 86.1% were female, and most practiced in independent community or specialty pharmacy (62%). Among respondents, 44% reported willingness to test. Top concerns for testing were family (73.4%) and self (66.8%) exposure and ability to manage the workflow (53.3%). Most participants indicated their willingness to treat (88.4%) and to administer the COVID-19 vaccine (76.1%). Study participants who worked in retail pharmacies were more willing to test for COVID-19 (50.9%,  $P = 0.34$ ) and to immunize (91.2%,  $P < 0.001$ ). Pharmacists  $\leq 39$  years (90.3%), those who graduate in 2000 or later (88.3%), and those with a Pharm.D. degree or higher (88.6%), were more willing to immunize ( $P < 0.001$ ).

**Conclusions** Most community pharmacists were more willing to treat and immunize, than to perform COVID-19 testing. This underscores the need for training and workflow changes to facilitate the acquisition of this new role. Local pharmacists' associations should advocate for a safe and manageable work environment. These efforts are vital to empower pharmacists to adopt new roles during a public health emergency.

**Keywords:** COVID-19 pandemic; community pharmacist; COVID19 testing; COVID19 treatment; COVID19 immunization

## Introduction

The coronavirus pandemic has caused a significant strain in health-care systems around the world.<sup>[1,2]</sup> Therefore, it is essential to identify strategies to alleviate the burden by incentivizing the participation of all health sectors. Community pharmacists can aid and support healthcare systems by educating the public, promoting disease prevention, screening for possible cases and referrals, conducting rapid testing, ensuring adequate treatments and providing mass vaccinations when available.<sup>[2,3]</sup> The willingness and readiness of pharmacists to perform these expanded roles have yet to be determined.

Pharmacists are recognized as one of the most accessible health-care providers.<sup>[2]</sup> As such, the community pharmacy is strategically positioned to provide services during emergencies such as natural disasters and pandemics.<sup>[1]</sup> In Puerto Rico, there are about 900 community pharmacies distributed among 76 municipalities.<sup>[4]</sup> In the aftermath of Hurricane Maria, community pharmacies were among the first to open and provide health services to the public.<sup>[4]</sup> In a study conducted by Jiménez-Mangual *et al.*,<sup>[5]</sup> respondents were highly satisfied with the care and services provided by pharmacists in the immediate aftermath of Hurricane Maria. These experiences have demonstrated that including pharmacists in a public health emergency response plan is essential to expand the provision of services across the island.

As the role of pharmacists as immunizers is essential for public health initiatives, national pharmacy organizations published a joint statement recommending pharmacists to test, treat and immunize to help address the coronavirus 2019 (COVID-19) pandemic.<sup>[2]</sup> Pharmacists in Puerto Rico were granted authority to immunize since 2012. As of October 2020, Puerto Rico had a total of 1308 certified pharmacist immunizers (CFPR, unpublished work).<sup>[6]</sup> Recently, the United States Department of Health and Human Services (US-HHS) has recognized pharmacists as a key to expanding testing and authorized pharmacist to administer the COVID-19 vaccine to persons ages three and older in all US jurisdictions, including Puerto Rico.<sup>[7]</sup> However, the willingness of pharmacists to test and immunize for COVID-19 remains unknown.

Pharmacists in most of the USA have the authority to initiate treatment by means of different approaches, such as collaborative practice agreements and autonomous prescribing.<sup>[8]</sup> Despite this, such practice is not widely implemented in Puerto Rico,<sup>[9]</sup> and currently, there are no FDA-approved outpatient treatments for COVID-19.

In public health emergencies, like the COVID-19 pandemic, trained community pharmacists can be the perfect access point to alleviate the burden on the healthcare system. Therefore, evaluating their willingness to respond to this pandemic becomes necessary for our understanding of how to train and support the pharmacy workforce. The aim of this study was to assess the community pharmacist's willingness to test, treat and immunize for COVID-19.

## Methods

A cross-sectional study was conducted to assess community pharmacists' willingness to test, treat and immunize at the onset of the COVID-19 pandemic in Puerto Rico. An electronic survey using REDCap<sup>[10, 11]</sup> online software was developed based on previously published surveys evaluating pharmacists' roles in pandemics<sup>[12]</sup> and on the recommendations made by the Pharmacy Organization's Joint Policy Recommendations to Combat the COVID-19 Pandemic.<sup>[2]</sup>

The survey contained 10 socio-demographic questions and 27 questions in the following four domains: practice and service adaptation, testing, treating and immunizing. The survey was piloted by

five pharmacists in Puerto Rico. Their recommendations regarding the structure and wording of the survey were incorporated. All licensed pharmacists in Puerto Rico who work in the community setting ( $N = 1200$ ) were invited to complete the survey. Retired community pharmacists were excluded. The survey invitation and link were launched on 18 May 2020, and were re-sent on a weekly basis for three consecutive weeks. The survey was distributed via the Puerto Rico Pharmacist Association's email listserv and through social media such as Facebook, Linked In and WhatsApp. The study was approved by Nova Southeastern University's Institutional Review Board.

In this publication, the willingness of community pharmacists in Puerto Rico to test, treat and immunize for COVID-19 was evaluated, taking into account gender, age, education and occupational characteristics of the pharmacists. Analysis of frequencies and chi-square tests were performed to assess if willingness to test, treat and immunize were associated with gender, age, year of graduation, job position, type of pharmacy degree, type of pharmacy in which they work and if they have been certified as immunizers.

## Results

A convenience sample of 314 participants (26.2% response rate) completed the survey. Participants who failed to answer key questions (willingness to test, treat and immunize) and participants who were not employed as a pharmacist at the time of the survey were removed from the sample ( $n = 12$ ). The characteristics of the final sample, comprised 302 participants, are described in [Table 1](#). A large majority (86.1%) of the sample were female. The mean age was 42 ( $\pm 13$ ), with more than half (57.7%) of study participants being 39 or younger. Two-thirds (66%) of study participants graduated from pharmacy school between 2000 and 2019, and a similar amount (66.9%) had a Pharm D. degree or higher. The majority (62%) of study participants worked in an independent or specialty pharmacy and slightly more than one-third (36.4%) of study participants

**Table 1** Sample characteristics ( $n = 302$ )

	<i>n</i> (%)
Gender	
Female	260 (86.1)
Male	42 (13.9)
Age	
39 or younger	174 (57.7)
40 or older	128 (42.3)
Education	
BS	100 (33.1)
PharmD	202 (66.9)
Graduation year	
Prior 2000	102 (34)
$\geq 2000$	200 (66)
Type of pharmacy	
Independent or specialty pharmacy	187(62)
Chain retail pharmacy	115 (38)
Position	
Pharmacy manager	110 (36.4)
Staff pharmacist	105 (34.8)
Floating pharmacist	44 (14.6)
Pharmacy owner	43 (14.2)
Certified as immunizers	
Yes	189 (62.6)
No	113 (37.4)

worked as a pharmacy manager. Another one-third worked as staff pharmacist (34.8%). Almost two-thirds (62.6%) of study participants were certified immunizing pharmacists.

When study participants were asked if they would be willing to perform COVID-19 testing at their pharmacy if provided with training and proper personal protective equipment, 44.4% indicated their willingness to test for COVID-19. Their top concerns for testing were exposing the family to the virus (72.8%), personal exposure (67.1%) and the ability to manage the workflow (52.2%). Ninety participants expressed, in the open-field questions, why they were unwilling or undecided on performing COVID-19 testing at the pharmacy. Beyond the three top concerns, they added that they lacked the physical infrastructure and appropriate training and refer to the medical technologist as the healthcare professional best suited for this task.

Study participants were also asked about their willingness to treat. A large majority (88.4%) of participants indicated their willingness to treat patients for COVID-19. Regarding their willingness to immunize, a large majority (76.1%) of study participants indicated their willingness to administer the COVID-19 vaccine in their pharmacy once available.

There was a strong association ( $P = 0.034$ ) between willingness to test and type of pharmacy setting. Study participants who work in retail pharmacy were more willing to test for COVID-19 (50.9%) compared to study participants who work at independent or specialty pharmacies (39.8%).

Several factors were strongly associated with willingness to immunize. Age was very strongly associated ( $P < 0.001$ ) with willingness to immunize. Younger pharmacists (39 and younger) were more willing to immunize (90.3%) compared to pharmacists aged 40 and older (57.5%). Year of graduation was also strongly associated ( $P < 0.001$ ) with willingness to immunize. Study participants who graduated prior to 2000 were less willing to immunize (54.2%) compared to those who graduated in 2000 or later (88.3%). Another factor strongly associated ( $P < 0.001$ ) with willingness to immunize was pharmacy degree. Study participants with a Bachelors of Science in pharmacy were less willing to immunize (51.0%) compared to those who had a Pharm D. degree or higher (88.6%). Type of pharmacy setting was another factor strongly associated ( $P < 0.001$ ) with willingness to immunize. Pharmacists who work in retail pharmacy were more willing to immunize (91.2%) compared to study participants who work at independent or specialty pharmacies (67.6%). Type of job also featured a strong association ( $P < 0.001$ ) with willingness to immunize. Pharmacists who work as a pharmacy manager (81.9%) or pharmacy staff (86.4%) were more willing to immunize compared to those who work as floating pharmacists (69.7%) or pharmacy owner (67.4%). Finally, pharmacists who are certified immunizers were more willing to immunize compared to those who were not (91.0 vs. 51.3%;  $P < 0.001$ ).

## Discussion

To date, this is the first study conducted among community pharmacists in Puerto Rico during the COVID-19 pandemic that provides baseline data that is not available elsewhere. In this study among community pharmacists in Puerto Rico, most participants were willing to vaccinate and initiate treatment, and nearly half were willing to conduct testing for COVID-19.

Testing for COVID-19 has been a significant challenge worldwide.<sup>[13]</sup> In response, the US federal government authorized pharmacists to conduct testing in the fight against COVID-19.<sup>[14]</sup> Although

this measure seeks to increase access to testing, there has been some resistance. This resistance has been both external and internal. In Puerto Rico, medical technologists (highly skilled health professional who perform and analyse the results of complex scientific tests on blood, bodily fluids and tissue samples) have lobbied against this federal measure, ensuring pharmacists do not have the skill set necessary to conduct testing safely and effectively.<sup>[15]</sup> Pharmacists have also expressed concerns with this measure. In Puerto Rico, only 85 pharmacists have been certified to conduct point of care testing in the only approved training centre on the island (B. Ortiz, unpublished work).<sup>[16]</sup> Despite this, nearly half of the respondents were willing to test with proper training. The need for education and training was an important finding of this study. Providing training for pharmacists to conduct testing is essential to prepare this professional to respond to the current and future public health emergencies.

National pharmacy professional organizations in the USA have lobbied to expand pharmacists' role to include testing in the fight against COVID-19.<sup>[2, 17, 18]</sup> These efforts should be combined with strategies to empower and prepare pharmacists for this expanded role. Vaccination by pharmacists has been implemented successfully for many years and is now included in the curriculum of pharmacy schools.<sup>[19]</sup> This success has been guided by education and legislation by each jurisdiction. Similar efforts are needed to implement pharmacists testing that aims to respond to public health needs, not only in times of emergencies. Chain retail pharmacies were among the first to adopt and implement testing.<sup>[20]</sup> Chain retail pharmacists were also more willing to test in this study. This may reflect their adaptability, resources and the success of the infrastructure established by their organization to adopt new services, such as testing.

There have been different models suggested to conduct testing in the pharmacy setting.<sup>[21]</sup> All models require knowledge of the Center of Control and Prevention (CDC) guidance to ensure COVID-19 testing is conducted appropriately in terms of timing and symptoms.<sup>[22]</sup> A lack of proper education in this guidance, for both pharmacists and the public, could impact the results of COVID-19 tests. In addition, point of care tests has significant limitations in terms of sensitivity and specificity, which can also impact the results. At the time this survey was conducted, there was a lot of uncertainty regarding COVID-19 tests. These factors may have also influenced the pharmacists' willingness to conduct testing. This also highlights the need to educate the public on when they should seek testing for COVID-19 to minimize the risk of incorrect results.

Point of care tests that are waived under the Clinical Laboratory Improvement Amendments (CLIA) has been conducted by pharmacists in the USA for a number of years. These tests allow for rapid and reliable detection of infections, including influenza and HIV, among others.<sup>[23]</sup> Although national certification programmes to train pharmacists in point of care testing exist, the requirements to conduct testing vary by state. In Puerto Rico, pharmacists can be certified by the Department of Health to provide HIV rapid tests. Requirements include completing a Department of Health education and training programme. As of 2014, Walgreens pharmacies on the island reported they had 22 pharmacies and 125 pharmacists certified to provide HIV rapid tests.<sup>[24]</sup> Currently, additional point of care testing is not widely conducted in pharmacies in the Island, and this is not a service most pharmacists are trained or accustomed to perform in their daily duties. Therefore, this lack of prior exposure and training may have impacted pharmacists' willingness to conduct COVID-19 testing in this cohort.

Pharmacists have contributed to increased vaccination rates nationwide<sup>[19, 25]</sup> since they have a broader community reach when

compared with other vaccine providers in a public health emergency.<sup>[26]</sup> Seib *et al.*<sup>[26]</sup> showed that pharmacists reported higher patient volume and patient-to-provider ratios as immunizers when compared with family practitioners, obstetricians and specialists, during the H1N1 pandemic in Washington, DC. The fact that younger pharmacists with PharmD degrees were more willing to immunize could be due to the introduction of vaccine administration training in the pharmacy school curriculum. Allowing pharmacists in Puerto Rico to immunize since 2012 has likely contributed to the adoption of this expanded role. Similar to testing results, pharmacists working in chain retail pharmacies were more willing to vaccinate. Interestingly, independent pharmacy owners and floating pharmacists were less willing to immunize. A floater pharmacist must adjust their leadership and performance style frequently based on the needs, expectations and culture of the different pharmacies they serve. They may feel more accountable for fulfilling other duties when compared to their responsibility of providing immunizations services.<sup>[27]</sup> They may also face challenges finding resources to administer vaccines and building a long-term patient and pharmacist relationship.<sup>[27]</sup>

Most of the survey respondents agreed that they were willing to initiate treatment for COVID-19 when available. Several studies have shown how pharmacists have initiated treatment successfully for patients with influenza and group A *Streptococcus* (GAS) pharyngitis.<sup>[28, 29]</sup> With proper training and policy decisions, pharmacists have the clinical knowledge to assess patient symptoms, perform and interpret point of care tests and initiate treatment under a collaborative practice agreement. The accessibility of pharmacists in the community can result in timely detection and initiation of treatment and can increase the capacity to respond to an emergency such as the COVID-19 pandemic. SteelFisher *et al.* showed pharmacists are willing to serve as a dispensing system and an alternative distributor for antivirals from public stockpiles during a pandemic.<sup>[12]</sup> This underscores the importance of the community pharmacy as a strategic location for the distribution of essential medications during a public health emergency.

### Limitations of the study

This study was conducted among Puerto Rico community pharmacists only and may not represent the willingness or needs of pharmacists in other jurisdictions. Due to the limited data on COVID-19 at the time of this study, experiences from the influenza pandemic were used to design the survey. This study was an exploratory study to obtain baseline information very early in the pandemic in Puerto Rico, and it was not grounded on theories of seeking behaviour. Hence, a cause and effect relationship cannot be truly established. By 15 March 2020, the Governor of Puerto Rico mandated a general lock down and curfew,<sup>[30]</sup> and only essential businesses were allowed to remain open.<sup>[31]</sup> At the time of this survey, community pharmacies had been one of the few establishments that provided continued service throughout the lock down. Many physician offices and other primary health care settings were closed, and therefore, patients relied on the pharmacy for their healthcare needs. In addition, there was an increased workload in the pharmacies, including prescription refills for extended supply. This increase in workload accompanied by the uncertainty and the risk of this pandemic could have influenced the way our respondents answered the survey and availability to participate.

The electronic survey was answered by 314 out of 1200 potential participants for a 26.2% response rate. Moreover, only 12

respondents were removed from the study because either they were not practicing anymore or did not complete the entire survey. This can be considered a relatively high response rate considering the electronic format of the survey and the lack of any type of incentives.<sup>[32]</sup> In any case, the convenience sample cannot be considered representative of the entire population of community pharmacists in Puerto Rico. The environment that we are living due to COVID-19 is changing and evolving constantly. It would be interesting to see what the participants would respond now, with the advancement in treatment, testing and vaccines.

### Conclusions

Community pharmacists are essential frontline health care professionals who have been crucial in curtailing the COVID-19 pandemic. Most community pharmacists were willing to treat and immunize than to perform COVID-19 testing. This underscores the need for training and workflow changes to facilitate the acquisition of this new role. Local pharmacists' associations should advocate for a safe and manageable work environment. Moreover, pharmacy schools and professional organizations should assume an active role in providing pharmacists the necessary resources and support as they adopt new responsibilities, so they can continue to impact and safeguard population health and wellbeing.

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### Author Contributions

Georgina Silva-Suarez: project conceptualization, instrumentation, data analysis, manuscript writing, revision, final approval of the version to be published, and oversaw and monitored the entire process. Yarelis Alvarado-Reyes: project conceptualization, instrumentation, data analysis, manuscript writing, revision, and final approval of the version to be published. Frances M. Colon-Pratts: instrumentation, data analysis, manuscript writing, revision, and final approval of the version to be published. Jesus Sanchez: instrumentation, data analysis, interpretation, statistical support, revision of the statistical analysis in the manuscript, and final approval of the version to be published. Blanca I. Ortiz: conceptualization of the project, liaison for data collection, manuscript revision, and final approval of the version to be published. Silvia E. Rabionet: project conceptualization, instrumentation, data analysis, manuscript writing, revision, and final approval of the version to be published.

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### Conflict of Interest

The authors have no conflict of interest to disclose.

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