Exploring the perceptions community pharmacists have towards the COVID-19 vaccine using a qualitative approach

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Abstract

Background

Since the severe acute respiratory syndrome coronavirus (SARS-CoV-2) in China emerged, millions have been affected. Due to the spread of the virus, and the increasing number of cases and deaths, the crisis has been declared a global pandemic. There have been several suitable vaccines and South Africa (SA) commenced its rollout in February 2021. The pharmacists have played a vital role through the Coronavirus Disease 2019 (COVID-19) pandemic as they are the first point of care for many. It is equally necessary to explore their perceptions towards the vaccine and vaccine rollout. In this study, the Theory of Planned Behaviour is utilized to explore pharmacists’ behaviour based on their perceptions towards the COVID-19 vaccine and the rollout.

Method

This study used a qualitative approach to gain depth on the topic and purposive sampling was used. Thereafter, more participants were recruited via a snowballing technique. All participants were community pharmacists in Durban, SA which was a COVID-19 hotspot. A letter of invitation containing an informed consent form was filled in by every participant. Semi-structured interviews were carried out and was audio recorded. Thereafter, the audio recordings of each interview were transcribed verbatim. Relevant quotes were isolated from the interview and were grouped into themes and sub-themes using Braun and Clark’s six-step data analysis.

Results

The four main themes were: Perceptions on the COVID-19 vaccine; Views on the vaccine rollout strategy; Pharmacist as an educator on the COVID-19 vaccine; Vaccine provision at the pharmacy. Each heading was broken down into sub-themes which were: vaccines are a social responsibility, pharmacists’ vaccine concerns, pharmacists’ views on the rollout strategy, pharmacists’ priority in vaccination, pharmacists’ self-reflection as an educator on COVID-19 vaccines, education topics, pharmacists’ sources of information for counselling, assuming the responsibility of becoming a vaccination centre, responsibilities of a pharmacist in a vaccine centre, planning and implementation to provide vaccines, challenges expected/currently experienced.

Conclusion

The pharmacist had a positive outlook on the COVID-19 vaccine and support the rollout. Furthermore, they play a necessary role in the vaccine rollout by educating patients and providing the vaccine at their pharmacies.

Background

After months of battling waves of Severe Acute Respiratory Syndrome Coronavirus-2 (SARS-CoV-2) infections, the rollout of vaccines presented a promising endeavour in the hopes of halting the pandemic (1). Since the emergence of Coronavirus Disease 2019 (COVID-19) infections, South Africa (SA) has experienced massive social and economic upheavals as a result of numerous lockdowns (2). In an effort to recover socially and economically, governments around the world stressed the importance of reaching herd immunity through adopting aggressive vaccination campaigns (3, 4).

Production and administration of a suitable and efficacious vaccine is critical for establishing levels of immunity in the community (4). Herd or population immunity will result in a lower chance of the susceptible population being at risk of contracting the disease (5). The herd immunity threshold for SARS-CoV-2 is approximately 67% (5), necessitating that this percentage of the population must be vaccinated to reach the goal (6).
Despite the great promise held by the vaccines, several concerns emerged which threatened a successful rollout strategy. Some of the concerns contributing to vaccine hesitancy globally included the safety, side effects, adverse reactions, and rapidity at which vaccines were developed (7, 8). This may negatively impact the successful vaccine rollout, hence addressing hesitancies and preventing misinformation should be a priority so that herd immunity may be established (9, 10).

The rollout of the COVID-19 vaccinations in SA had commenced in February 2021 (11). According to the initial strategy, pharmacies were tagged to play an integral role by serving as vaccination centres (12). This entails the administration, management, distribution, and promotion of pharmacovigilance (Perumal-Pillay, 2021; Westrick et al., 2009). Pharmacies were considered ideal for this role because of their ease of accessibility to communities which in turn increases the coverage of vaccinations (15–17). In SA, all pharmacists are exposed to vaccination training in their undergraduate curricula, however those wishing to administer vaccinations are required to complete an additional course and register as a Primary Care Drug Therapy Pharmacist (18). It should be stressed that those pharmacies not involved in vaccine administrations, still have a massive role to play in the promotion of vaccination by serving as a source of reliable information to allay doubts and fears including eradicating vaccine hesitancy by advocating for the vaccine (14, 19)

Pharmacists are influential and easily accessible health professionals (16, 17). They are also a first point-of-care for patients (15). According to a yearly poll done by Brenen (2018), pharmacists ranked in the top five most ethical and honest professions (20).

Despite increased accessibility to pharmacist-initiated vaccine programs, the International Pharmaceutical Federation highlighted that several challenges may be faced by pharmacists regarding vaccination. These challenges associated with providing immunisation in totality, may apply specifically to COVID-19 (21). Broadly, these challenges can be separated into 3 levels. At an individual level, barriers include misinformation, lack of understanding regarding the vaccine, cultural and religious beliefs, fear of injections and poor communication. Secondly, the vaccination process may also present issues such as missed doses, difficulty in scheduling appointments for vaccination, incomplete vaccination records and lack of accessibility to the vaccine. Lastly, the vaccination system also has several constraints for pharmacists. These include lack of storage space, inadequate finances, politics, and legislative constraints (21).

The goal of achieving herd immunity will only be successful when healthcare professionals, such as pharmacists, support and encourage vaccination. Such support and encouragement is a reflection of their perceptions on the vaccine and rollout. However, not much has been written within the South African context regarding the perceptions of pharmacists on the COVID-19 vaccine, rollout strategy and their role therein.

The study aims to explore the attitudes and perceptions that community pharmacists have towards the COVID-19 vaccine and the vaccine rollout. Related to this overall aim was to further understand how they view their role in the national rollout strategy.

**Aim**

The overall aim of this study was to explore the attitudes and perceptions that community pharmacists have towards the COVID-19 vaccine and the vaccine rollout. Related to this overall aim was to further understand how they view their role in the national rollout strategy.

**Methods**

The study employed a qualitative research design using semi-structured interviews in order to gain a detailed perspective of the participants’ experiences. The method allowed the researcher to establish deeper meaning to make well-rounded conclusions. Qualitative research allowed the researcher to understand the perceptions community pharmacists have towards the vaccine and the rollout, thus making it the most appropriate choice of design.

A qualitative research design allows for a researcher to gain “lived experiences” from the perspective of the participants and establish meaning from it (22). In order to gain a deeper understanding of the topic, which focuses on the insider’s point of view
rather than an external view on the topic, a qualitative study was preferred. The qualitative design was more suitable in the study of this nature as the researcher was interested in exploring the perceptions community pharmacists had regarding the COVID-19 vaccine, and one needs to dig deeper in order to get a well-rounded picture of these experiences. Qualitative research provided the researcher with the tools for thorough insight.

**Research Participants:**

All participants were community pharmacists currently employed in Durban, SA, which is the country’s third-largest metropolitan. With a population of 4 million people, Durban was declared a COVID-19 hotspot during the course of the pandemic (23).

**Type of Sampling and Sample Size:**

A purposive sampling technique was used as the study was very focused and the sample needed to be in agreement with the goals of the research (22).

Participants were recruited using a snowball method, whereby each participant was asked to refer a colleague, upon consent of the colleague. A letter of invitation with an informed consent form was forwarded to all recruits. Those pharmacists who agreed to participate communicated a convenient time and platform for a meeting. Gatekeeper’s permission was obtained when interviews were conducted in or from the workplace of the participant. The sample size was not stipulated due to the nature of the study, but sampling was ceased when saturation was reached; meaning that there was no new information, and redundancy was achieved (24).

**Data Collection and Analysis**

A semi-structured interview schedule was designed. The interview was piloted for clarity, ambiguity, and research alignment before commencement of data collection, following which the schedule was amended accordingly.

A total of 11 interviews were conducted via online platforms or physically at pharmacies. Two interviews were conducted via WhatsApp call, three interviews were conducted at the location of the pharmacy, and six interviews were done via Zoom. The interview schedule contained open ended questions to promote an in-depth conversation. In order to fully understand the participants, probing and clarification was included in the schedule. The interviews were approximately 35–50 minutes long. All interviews which were conducted on Zoom were recorded using the Zoom recording feature. The rest of the interviews were recorded on a phone recording application. Despite several platforms being utilized for the interviews, the schedule and interviewing style remained the same. The interviews were all conducted by the same interviewer, thereby eliminating biasness. The first interview was conducted on the 28th of April 2021 and the last interview was conducted on the 17th August 2021. Immediately after the meetings, all eleven interviews were transcribed verbatim and analysed using thematic analysis. Each respondents’ transcription were chronologically titled Pharmacist 1 until 11.

**Data Analysis**

After transcribing the interviews, the next stage involved data analysis. Using Braun and Clark's six step analysis, data was organized and thoroughly analysed (25). The transcribed audio recordings were checked for any missing data against the audio recordings by the researchers and a moderator to improve trustworthiness. Data were read and re-read for familiarisation by two independent researchers to obtain an in-depth understanding of its content. Significant quotes were highlighted, and patterns were coded. The quotes were grouped according to the codes that are relevant to the research questions. The themes and subthemes were then formulated based on the organized data. Researchers discussed the themes at length until a consensus was reached. An expert in qualitative research approaches, employed at the tertiary institution, was used to moderate codes as well as processes independently (25).

**Ethics**
Ethical approval was obtained from the Humanities and Social Sciences Research Ethics Administration, University of KwaZulu-Natal (Protocol Reference: HSSREC/00002559/2021) before commencement of the study. Participant confidentiality was maintained throughout the study. Informed consent and permission for audio recording was sought from each participant. Gatekeeper's permission was sought when the interviews were conducted from a place of work.

**Results**

In this section, results are presented from the qualitative analysis to answer the 3 research questions. The study yielded four main themes and 11 subthemes. Figure 1 below illustrates the link between the research questions, main themes and subthemes.

**Demographics:**

There was a total of 11 participants (6 females and 5 males), who were all registered community pharmacists practicing in Durban, SA.

**Theme 1: Perceptions on the COVID-19 vaccines**

One of the main aims of this study was to understand the perceptions pharmacists have towards the COVID-19 vaccine, as it affects health behaviours. From the analysis, it emerged that whilst participants understood the importance of being vaccinated for the greater good, they still raised concerns which potentially contributed to some hesitancy about getting vaccinated.

**Vaccines are a social responsibility**

All participants perceived the COVID-19 vaccine to be an essential measure for their own safety as they are frontline workers. This was evident when Participant 1 felt, “…that it's essential that we all take it if we're working with public... For now, this is our hope to curb this.” Participant 3 expanded on the importance of getting vaccinated, “At the end of the day, in the present moment, you got to look a bit beyond. And that's what I told myself that if this is my chance to prevent myself from- while you can still get the virus, as such- but it's a chance of living.” Additionally, some of the participants recognized the social and financial relief for the populations as stressed by Participant 6, “…getting everyone to vaccinate is much more important than making that money, we can make it after COVID.”

**Pharmacists’ vaccine concerns**

The participants were in agreement of the positive public impact of the vaccines, but there were concerns that were identified. One of the major concerns of the participants was the rapid rate at which the vaccine was developed, with Participant 8 sharing that “As a pharmacist, you are also aware of the manufacturing process of many drugs, and that includes vaccines. And we also know that it takes quite a while before something has been developed. It takes sometimes 10 to 14 years for a new drug to come into the market.” This sentiment was echoed by Participant 4, “We need to accept the fact that these vaccines or even these treatments, or whatever it is, has been developed in haste. Very rapidly, more rapidly than anything else.” Pharmacists being experts in drug manufacturing questioned the processes undertaken to fast track the vaccines. Pharmacist 8 elaborated, “I also do understand that we are in the midst of a pandemic. So obviously things are fast-forwarded. And that to me is a concern because when we are fast forwarding things, what are we overlooking? Or what are we allowing?”

Pharmacists were sceptical that certain vaccinations are developed using technology that had not been tested previously. Participant 10 pointed out, “Initially I was a bit sceptical with the Pfizer one because it was unproven technology- never used before. Something that was developed and something that was rushed... Personally there was doubt. New technology, untried, and should we actually go take it. But as time went by and we got into more of the science behind it we realized that 'hang on', it's not so bad. And it might be the better option to go with than your traditional vaccines. And then we leaned more towards the mRNA technology.”
Due to the rapidly mutating nature of SARS-CoV-2, there were pharmacists who expressed worry regarding the efficacy of the vaccine on new variants as they occur. One such pharmacist was Participant 5, “The uncertainty is- the major one- is if we have a third wave, and if there is a new strain, are these vaccines going to be effective?”

In addition to the development of the vaccine, participants also expressed further concerns regarding the fear of the unknown i.e. adverse effects that may only present itself in the future. Participant 9 expressed this concern, “The fear factor is still there, even though I’ve taken it myself. The fear factor is still there, that there could be side effects. It could be issues arising for 5, 10 years down the line, because I don’t think we’ve tested it enough to know exactly what’s going to happen. In the same breath, we so called didn’t have much of a choice.” The participants, however, still advocated for the vaccine despite these factors in favour of the benefit to risk ratio. Their knowledge of vaccination and medicine has allowed them to understand that every allopathic medication may have side effects, as Participant 8 described, “I would definitely do it on a risk to benefit ratio. I would not be ‘yes, definitely, definitely take it’. No. I would say it will be risk to benefit. If a person wants to take it, it's entirely up to them, and I will not discourage them.” One of the adverse effects that was discussed by Participant 2 was, “The uncertainties was one with regards to the side effect where they found that rare clotting in the Johnson and Johnson one... So, it is a bit intimidating.”

**Theme 2: Views on the Vaccine Rollout Strategy**

The national COVID-19 vaccine rollout strategy is currently in motion in SA, which commenced in February, 2021. The pharmacists have acknowledged the enormity of the task but have also pointed out several flaws that the government should have addressed at an earlier state. The main two concerns were the slow start to the vaccine rollout in SA, and secondly that pharmacists were not prioritized in the vaccination rollout.

**Pharmacists’ views on the rollout strategy**

Several participants have expressed that they were initially disappointed with the slow start of the vaccine rollout strategy to the public in South Africa when compared to other countries, as expressed by Participant 11 who felt, “...the vaccines came into the country very late.” This was further expanded by Participant 9 who said “...it was too slow. We felt they didn't do enough to inoculate people quicker”. They recognized that the rollout has since gained momentum. Participant 10 said, “We have gone far ahead, and we are almost on par with some of the other first world countries in terms of the number of jabs per arm per day. So, we're actually doing quite well now. Now that we've ironed out all these things... So now it's all about who can get vaccinated.”

**Pharmacists’ priority in vaccination**

Most of the pharmacists were disappointed that they were not prioritized amongst healthcare workers in the Phase I of the vaccine rollout. Pharmacist 3 discussed their experience, “We were a bit disappointed that we were vaccinated so late, because the vaccines arrived here, on first of February, and then it's only in the beginning of May, that we were able to get our vaccine, or actually the end of April. So, it's been like a long time waiting for the vaccine.” Furthermore, disappointment in the statutory body was also expressed as pharmacy support staff were not able to get vaccinated, despite also being considered frontline workers. Participant 9 expressed, “My personal opinion was- the way they approached the pharmacies was totally incorrect. I also feel our pharmaceutical society and our South African Pharmacy Council didn't do enough to get the pharmacists, pharmacy assistants or front-shop assistants or security guards into the whole rollout system... We never got vaccinated in the first round, we got vaccinated in the second and third round.”

However, it is necessary to point out that Participant 10 did acknowledge that community pharmacists are at a lower risk compared to other healthcare workers, which may justify the delay in vaccination. They said “… fellow health professionals are in more physical contact with the patients than we are, so they are more at risk. So, I'm not going to begrudge that person because they need it more than I do. I'll wait. I'll take the precautions. I will use a mask more often than I need to and sanitize more often than I need to, but I'll take the necessary precautions until I get my dose.”

**Theme 3: Pharmacists’ role as an educator**
Many of the participants mentioned that they believed that it is their duty to serve as an educator to the public on health related topics. They have noticed an increase in patient inquiries regarding the vaccine. Their sources of information and their methods of education were also further discussed.

**Pharmacists as an educator on COVID-19 vaccines**

In order to understand how pharmacists are a source of information, it is necessary to highlight how they view themselves as educators to their patients on health related topics. With the introduction of the COVID-19 vaccine, pharmacists felt obliged to counsel and educate patients in this regard. Participant 10 expressed, “There’s also recently with the availability of vaccines (the need) to educate them on the importance of taking the vaccine, counselling on the side effects and then to allay any fears that they have about taking the vaccine.”

Pharmacists view themselves as easily accessible healthcare workers, and their patients often come to them before any other health professional, as shared by Pharmacist 8, “…we are now becoming the first point of contact for advice because patients are not going to their doctors anymore.” Furthermore, Participant 6 mentioned how the community seemed to appreciate their presence, “We noticed that the customers were a lot more appreciative of the pharmacist being there.”

One of the factors that contributes to the patients seeking out the counsel from their pharmacists is the trust that they have established. Participants shared that having frequent interactions with patients builds trust and confidence in the information that they relay to their patients. Participant 4 provided a further insight on the relationship, “…basically, you know, reassuring patients that ‘Yes, you’re going to take the vaccine, you’re going to be sick for two days, but it’s 100 times better than actually getting COVID… I always describe it as, a pharmacist as a bartender, right. When someone goes to the doctor, for example, it’s very formal sometimes, very short interaction… Here you’re expected to develop personal connections with your patients.” The familiarity patients share with their pharmacists, contributes to their trust. Participant 3 said, “You know, and it’s also that trust. If I’ve given injections before and your flu vaccine before, or given you an injection before, you won’t mind taking any injection from me.”

Additionally, due to the pharmacists’ frequent involvement in their patients’ health, pharmacists have the knowledge of their patients’ health history which allows effective patient education. Pharmacist 9 explained that “I have the history on my computer. I have the history sometimes in my head, mentally. So, I can advise the patient accordingly. 99% of the time, I will tell the patient. ‘Yes, you must take the vaccine. There should be no issue with you considering your history, your health history, and considering the medication you are on. You have to take it. You must take it.’” Similarly, Pharmacist 1 targeted chronic patients who come to the pharmacy to take the vaccine, “See, with a chronic patient, I would say you shouldn’t even question. What other hope do you have?”

Participant 9 relayed an experience where his advice was against taking the vaccine due to knowledge of the patients’ medical history and health conditions. “I had a unique case of a patient that was on a blood clotting agent, anticoagulant, called Pradaxa and she’s a teacher. So, she registered for the vaccine, and she was going for vaccine. And before she went, she’s just out, of the blue, decided—‘I’m on this medication, should I take it or not?’ So, she phones me and I said, ‘No. But don’t take it because I’m telling you no. You phone your specialist and speak to your specialist.’ And her specialist told her ‘No, you can’t take it because the chances of getting a blood clot are so great.’ And she could have passed away. So, there are individual cases where we cannot handle. That even though we tell them no, we have to refer. But I think majority of the cases, we know that patient and we know their history and know what medication they’re taking. We can advise them to go and take it.”

**Education Topics**

Pharmacists have the capability to eradicate misinformation and myths associated with the vaccine especially those that are circulated via social media. Additionally, patients approach pharmacists to gain more information on the rollout arrangements that were stipulated by the government. Participant 10 discussed, “The problem is because of what has been on social media regarding the side effects and the negative aspects of taking the vaccine. We now have to spend a lot of time counteracting and changing those perceptions”
Addressing patient hesitancies forms part of the pharmacists’ counselling on the vaccine. This includes addressing side effects, variance, and fast tracking of the vaccine. There are several conspiracy theories that need to be debunked by the pharmacists too. Participant 1 explained, “A lot of people were sceptical that the vaccine was created so quickly. I think the challenge is to educate people about the myths and to reinforce all the basic things they could do to stay safe... Especially these things about- that they going to inject a chip and you going to be monitored, that they going be brainwashing you. I was like, ‘Where did you get that from?’ But you see, this is the thing about media. People don't check- they believe it.”

Furthermore, pharmacists also address religious misinformation; myths that the vaccine consists of tackers and microchips; as well as concerns regarding fertility. Participant 10 expressed, “It's also religious organizations- from certain, I can't specify. Where they've encouraged their members of their organizations not to vaccinate. It becomes difficult to correct that. More difficult to correct someone who read incorrect information on Google. It's more difficult to correct someone who's convinced by someone who tells them it's not safe to vaccinate for various reasons like they are tagging you or its going to destroy your organs. Or they basically now shortening your life span because whatever.”

Additionally, patients approach pharmacists to gain more information on the rollout arrangements that were stipulated by the government. Pharmacists provided details on the logistical plans for their vaccination to occur such as registration information. Participant 7 explained their role in this regard during the over 60-years-old vaccination rollout period by stating, “right now it's just advising customers. This is what they need to do. They need to be registered. They have to be over the age of 60. That sort of thing.”

Patients were also given information on the COVID-19 vaccines and their regimens that are currently available in SA. Participant 2 explains, “I'd explained to them the types of vaccines available. The Johnson and Johnson one is currently used now, but it looks like majority of our elder population is going to get the Pfizer vaccine since there's more doses of that. The Pfizer vaccine is two doses. So, it may involve the patient going back for a second dose.”

Throughout counselling, it is the responsibility of the pharmacist to ensure autonomy is maintained. As vaccination is a choice, a patient needs to have a good understanding to make the decision to vaccinate. Thus, the pharmacists have ensured that their patients have a well-rounded understanding of the COVID-19 vaccine through their discussions with their patients. Participant 3 enforced this with their patients by thoroughly discussing the vaccine, “…actually talk about the vaccine, its benefits, the advantages, the disadvantages, the reasons why they should vaccinate, how they should go about registering.” Participant 8 discussed the importance of being brutally honest about the risks associated with the vaccines, “They always asked me if I feel that it's safe. And you have to be honest, when you're asked that question, because nobody can guarantee the safety of the vaccine not even manufacturers. Everything is trial and error at this point... Unfortunately, there's not enough information on the vaccines, because of being fairly new. And we just learn new information every day. So obviously, the decision lies entirely on you...”

In addition to educating their patients, pharmacists also served as advisors to policy makers dealing with the COVID-19 vaccine rollout strategy in SA. One of the participants were amongst the key role players involved in the South African vaccination programmes which included drafting policies and organizing the private sector vaccine rollout for community pharmacies. Pharmacist 11 discussed their experience, “I started to play a role at a national level at the B4SA, which is Business for South Africa... So, whether it was hospital sector, pharmacy sector, GP sector, so in that work stream, I took on the role of the lead for pharmacy... A lot of my roles has been around policy, vaccine policy in the country, for pharmacy, section 22A(15), for example, that permit, that whole process. Then the issue of ensuring that pharmacy is at the table. And I do provide the information as a lead to the rest of the pharmacy community.”

Pharmacists’ sources of information for counselling

In order to adequately respond to patients’ questions on the vaccine, pharmacists need to be well educated on the vaccine from reliable sources to ensure quality counselling which in turn fosters patient confidence Participant 4 stated, ‘You should be taking the vaccine and be as informed on the vaccine and different types of vaccines as possible, as well informed as possible; because the last thing that diminishes patient confidence is ‘I don't know’... Patient confidence and information is very
important.” Social media has an abundance of information, but not all the information is considered to be legitimate.

Participant 10 said, “Basically, we have to sift through information... And those we are not sure about, we investigate further. We learned not to take everything at face value. We interrogate everything.” By looking at the data, it is reassuring to note that the pharmacists’ most sought sources of information were journals and research articles. Thereafter, the pharmacists referred to drug company webinars, the media, healthcare associations such as the Independent Community Pharmacy Association (ICPA) and other health professionals. Participant 4 continued, “It’s a form of research papers. It’s in the form of webinars, interactions with companies, interactions with other specialists, doctors.”

Vetted statistics drawn from published studies was used to validate their counselling. Participant 11 stated, “The fact that there is data, current data, I shared that with them. So, somebody’s seeing some data around the fact that for every 100 patients that is hospitalized, no one in the 100 is vaccinated. That means if you take the vaccine, you could be someone that’s not hospitalized. That’s what the data is showing. People that have died in the last week, of those numbers, there’s no one there that died that took the vaccine. Those are things real things that patients can touch and feel. And that’s the information I try to pass on.”

To effectively counsel patients, participants also drew from their personal experiences so that they can provide advice to the patients on the COVID-19 vaccine. Participant 4 said, “... in our situation, and personal journeys are very important, especially to the patient. You’re dealing with a lot of them on a very colloquial level. Some on a very personal level. So, they want to be able to relate to a lot of what you’re saying. If you’re unrelatable, you’re not going to get through to them.... Most of my patients knew I was COVID positive, because at one point I was out for about three weeks... And I think recovering from that also plays a major role in how information from me is portrayed, because I’ve been through that. I’ve been through the worst of that and I am still telling you to get a vaccine.” Furthermore, the patients directly enquire about the pharmacists’ personal journeys. Participant 2 elaborated, “they would ask me about my vaccine experience, so I get to share that with them. And I think it helps calm the fears and actually discourage the misinformation that’s being spread about on social media.” Thus, this is an effective method of providing assurance and acceptance.

Theme 4: Vaccine provision at the pharmacy and challenges

According to the National Vaccine Rollout Strategy, pharmacists are used as vaccination centres. This responsibility was assumed by several pharmacies around the country and they are successfully providing vaccines to their communities. Several participants were in the planning stages or already vaccinating their patients against COVID-19.

Assuming the responsibility of becoming a vaccination centre

Based on the data analysis, it can be clearly seen that the pharmacists were enthusiastic and passionate about providing the vaccines at their pharmacies. Participant 3 indicated, “It’s the passion. It’s also protecting the community, because in that community, is also your friends, your family and everybody else. ... So, if we’re not going to give support, how would we expect support? So, I will do my part, in whichever way I can.”

As Participant 11 explains, “I think we were given almost a lifeline because this has completely opened the doors for pharmacy at this level. I think for a long time we took a secondary role on many many occasions. And we were never the primary role players in healthcare in the country. I think for the first time, we see other professions, looking at pharmacy and asking, ‘How did you do that?’” therefore, this has also been deemed as an opportunity for pharmacists to expand their roles and take responsibility for a larger scale project which is the vaccine rollout.

Additionally, Pharmacist 7 viewed the COVID-19 vaccine rollout as an expectation that patients have of the pharmacy, “People do expect us to be able to give out vaccines. I mean, if you’re giving flu vaccines, baby vaccines, COVID vaccines should just be one of those things as well.”

Responsibilities of a pharmacist in a vaccine centre
The pharmacists will also play a vital role in the vaccine centre at which they work. This includes vaccinating patients, assisting with management, and administration. There were participants who are registered to provide vaccines. This means that they will be injecting the patients with the vaccines. Participant 4 is one such pharmacist who said, “I’m a PCDT pharmacist, so we (are) allowed to vaccinate as well.”

Pharmacists also viewed their responsibilities in managing the smooth operation of the vaccination site. There are several responsibilities including ensuring vaccine stock management, staff management, and storage of the vaccines. This role was discussed by Participant 11, “I think it’s an overseeing role. So, there’s various parts of the vaccine program, and various people taking responsibility for various parts of it. So, I kind of have an overview - from the stock, acquiring the stock, to then ancillaries, bringing that in, to making sure that it stored in the right place at the right temperature, all the way down to getting into the patients’ arm.”

As Participant 5 mentioned, there are many administrative roles that will need to be filled, “There’s a lot of registration, online registrations and things that we got to do. So, we would obviously assist with that as well.” Those pharmacists who will not injecting the vaccine to patients, will be assisting in the registration of patients, and others have arranged extra staff during the vaccine rollout for this purpose. Participant 2 explained, “We have four nurses who are volunteering their services to vaccinate. We are going to get our volunteers to help with the data capturing.”

**Planning and Implementation to Provide the Vaccines**

Vaccinating against COVID-19 will require the pharmacists to take several measures in preparation for the process. These include having sufficient facilities such as proper cold chain management, staff, infrastructure and sufficient space to maintain safe social distancing. Participant 8 explained, “Part of the rollout strategy, (is that) they have got a relationship with the Department of Health. And so, we are one of the sites that are scheduled to be part of the next phase and we are starting officially (on) Wednesday... We do have a separate vaccination area, waiting and recovery area, and the administration area... We do have a fridge to store the vaccines. We've been given all the First Aid equipment in the case of anaphylaxis, so I think in terms of all of that, we are equipped.”

Pharmacists stated that amongst the reasons for declining the opportunity, was the immense responsibility for smaller pharmacies who did not have the capacity or resources to procure vaccines and to cope with the influx of patients. Participant 1 explained, “I registered to be a site, but the protocols and what you had to have in place was overwhelming for a small pharmacy. So, I don’t think that is something I would be happy to do. It’s just too much of work, and I don’t have the capacity. I’m not going to employ more people.” Pharmacist 6 shared similar sentiments by saying, “There is no disposable income for a pharmacy, especially a community pharmacy to go and buy vaccines on their own. So that has really turned a dampened spirit on that whole drive of vaccinating the community.”

**Challenges expected/ currently experienced**

There are several challenges that the pharmacists have pre-empted and have experienced thus far with vaccinations. The main challenges being dealing with the crowds and the high demand for the vaccines, lack of staff, wastage of doses, payments for the service, and technological disruptions.

The first concern discussed is the difficulty associated with a large influx of patients. Participant 5 said, “Volumes of people, the volumes of people, you know... People coming in with no registrations, and don’t have booking slots. So, if we have that sort of situation, it’s going to be very very stressful and very very pressurizing on us.” Participant 7 agreed, “I think the challenge from pharmacy level what we would be experiencing is obviously the influx of people coming into the pharmacy and, you know, probably expecting just to be receiving the vaccine immediately without having to wait or without having to make an appointment.”

Many of the participants have noticed an influx of patients coming into the pharmacy seeking information and updates regarding the pandemic as well as the vaccines. This has however become tiring for the participants because of the increased workload. Participant 10 elaborated on their interactions with the patients, “It becomes tiring because we have to go through
Participant 11 describes an issue with the government’s online booking system, whereby patients were randomly allocated to sites, and were not presenting at the allocated site, “I think we’ve been quite successful, but the challenge has been with the online booking system. We didn’t do that because there’s a random allocation of patients and based on our communication with other vaccination sites, those who book online, there’s only about 25% of those patients who turn up for the vaccine. So, there is a big challenge now in terms of drawing doses and if people don’t come and then there’s a waste in doses... So, we went with a manual booking system.”

The participants have expressed that a lack of staff is another issue that will be faced. The pharmacy needs to run the vaccination facility as well as continue with regular pharmacy duties. Participant 8 explained, “Since I’m the only one who can vaccinate, that means I will be out of the dispensary for the time that the vaccinations are going on. And, with no extra personnel to be in the pharmacy to assist in the dispensary to cover the tasks that I do in the dispensary on a daily basis. That leaves me with a lot more workload at the end of the day because after my vaccines, I have to go back and finish the stuff that I have to.” Participant 11 highlighted that the measures that were taken to prevent a shortage of staff included the following, “So it has put a strain on the overall operation of the pharmacy because we haven’t brought in extra people except the masters students like you- to assist in the drawing of the doses... Unfortunately, we’ve had to cancel all leave. Because if someone goes on leave it puts more pressure on the operations.”

The pharmacies will need to procure the vaccines; hence the wastage of vaccine doses will have a negative cost implication. Participant 5 explains, “...also the volatility of the vaccine. You know, you can’t waste any vaccine, because it’s very expensive. We have to procure them ourselves, which means we got to bear the costs of it and wastage can lead to a lot of unwanted expenses.”

In addition to this, there is a major problem faced by pharmacies who are currently rolling out the vaccine. This being the remuneration and payments for the vaccination services being covered by government subsidies. The medical aid patients are covered, and the pharmacy receives payment immediately as seen with Participant 11 who said, “And we’re doing private work with a good private infrastructure in place, something that worked before. And we are utilizing in the same system, it’s not new. We all used to it. And we know it works. And we know we will get paid. We then moved into a government system, where one it’s not clearly defined. It’s running on a voucher system. There is no money exchange. So, it is complex, complicated, a lot of unknowns. The big issue is that if you’re sitting with the credit in government, can they afford to pay you? So that’s a huge challenge for us. And probably one of the biggest challenges.” Since medical aid patients are being covered, pharmacies still receive a revenue from vaccinating patients. Furthermore, at the time, the government had not issued invoices for the vaccines to the pharmacies, thereby delaying one of the major expenses. Pharmacist 10 explained, “So, you are basically getting that R350 or R400 which you can use to pay for your staff which you’ve added there because you only need to pay for the vaccine 90 days after the date of statement. And no statements have been issued yet.”

Finally, pharmacists were anxious about the frequent power cuts which may result in disruption of technology and refrigeration as Pharmacist 2 pointed out, “Another challenge could be that we don’t know about load shedding. So South Africa experiences a lot of load shedding and unexpected times. With vaccines, they are very thermosensitive.”

Discussion

This qualitative study presents an insight into the attitudes, perceptions and experiences community pharmacists have towards the COVID-19 vaccine and the rollout, as well as how they view their role in the rollout strategy.

The theory of planned behaviour explains that behaviours are influenced by attitudes, subjective norms, and perceived behavioural control (26). This theory assists in understanding that the pharmacists’ attitudes, subjective norms, and control perceptions on the COVID-19 vaccine predicts the behavioural intention, and this will thereby impact their actions and behaviour. The pharmacists’ beliefs will affect their intention on vaccinating themselves. This extends to the manner in which
pharmacists engage with their patients when counselling on vaccination. Lastly, the theory will assist in explaining the link between the pharmacists' beliefs and their the decision to implement the provision of vaccination in their pharmacies (26).

When looking at the participants’ personal views towards the vaccine, they recognised that by taking the vaccine, they can protect themselves and others from COVID-19 (27–29). The pharmacists have acknowledged vaccination as a potential solution to the COVID-19 pandemic, as encouraged by WHO (1). The acceptance of the COVID-19 vaccine amongst healthcare professionals is vital for a successful vaccine rollout (29). However, before taking the vaccine, the participants experienced several concerns.

Under normal circumstances, vaccine development takes between 10–15 years, indicating that this vaccine has been fast-tracked dramatically (30). Although the Pfizer vaccine was developed within a few months, the company has been committed to vaccine safety during development and administration (31, 32). Similarly, the Johnson & Johnson vaccine is also considered safe and efficacious despite the fast tracking of the developmental phase (33).

An efficacious vaccine is one which will reduce the severity of the disease, and this must be maintained despite the variants that may occur (34). This presents itself as a concern for pharmacists in the event that the vaccines are ineffective against newer variants. Constant analysis of breakthrough infections needs to be done to track the mutations of the virus (35). However, despite these concerns, many of the pharmacists have opted to take the vaccine during the vaccine rollout in SA. When looking at the theoretical framework, pharmacists acknowledge the concerns, and are also well educated on the vaccine, which explains the reasons most of the participants vaccinated or planned to get vaccinated against COVID-19 (26).

The pharmacists were disappointed that the vaccine strategy was implemented much later than other countries. SA rolled out the very first vaccines on the 17th February 2021 (11). While, the first vaccinations performed outside clinical trials were dated on the 13th December 2020 in the United Kingdom (36). Furthermore, the vaccine strategy in SA was further delayed due to the inefficiency of the Oxford-AstraZeneca vaccine against the 501.V2 mutation of the virus (37). The number of daily vaccines administered started steadily increasing only in May 2021. Until which, the vaccination rate was low and there were even days of no vaccinations occurring (38). However, progress can be noted and vaccine uptake in SA is in line with world rate (39).

During this COVID-19 pandemic, health professionals have been classed as frontline workers, therefore it was necessary to prioritize them before the public when rolling out the vaccine (Cadogan & Hughes, 2021). Pharmacists noted that they were not prioritized amongst healthcare professionals to receive the COVID-19 vaccine. Unfortunately, this is justifiably disappointing as pharmacists’ are frontline workers who have played a vital role in the community during the COVID-19 pandemic (Cadogan & Hughes, 2021; Goff et al., 2020). The governments approach had required rationing of the vaccines available with the health professionals. Those at higher risk of contracting the disease would have been vaccinated first (43). Pharmacists were vaccinated at a later stage due to the lower risk that is presented to them. The nature of community pharmacies allowed for preventative measures to be undertaken, which is a privilege that other health professionals may not have had (44).

Due to the ease of accessibility of community pharmacies, pharmacists were able to provide medical advice to their patients through the course of the pandemic (Cadogan & Hughes, 2021; Eades et al., 2011). Therefore, pharmacists are influential in combating vaccine hesitancy by relaying trustworthy, scientifically accurate information to their patients (45, 46).

The pharmacists’ knowledge of the vaccine will thereby influence their behaviour, as well as the manner in which they counsel their patients. It is necessary for their sources of information to be trustworthy so that correct behaviour of the pharmacist is encouraged (26). Thus, pharmacists can be defined as a provider of education on vaccination, while maintaining the patients’ right to autonomy (47–49).

Several pharmacists have mentioned that they have become the “first point of call” for many patients (50). Community pharmacists know their patients personally because of their frequent interaction, which develops patients’ confidence in their pharmacists (51). Along with education on medical topics, the pharmacists view themselves as healthcare professionals who also provide empathy and reassurance (52). Therefore, the pharmacists’ advice and reassurance will make an impact on the patients’ decision to vaccinate, thus contributing to vaccine acceptance (53).
Many participants have observed an increase in the number of concerned patients who require further information on the COVID-19 vaccines (54). Additionally, unlike other health professionals, advice from a community pharmacist does not require a patient to have to pay for a consult (55). Promotion of vaccination is one of the means to overcome vaccine hesitancy. By engaging with the communities, confidence can be built towards the vaccine (10). This forms part of the pharmacists scope of practice and is within the Good Pharmacy Practice guidelines (56).

In order to make an educated decision to vaccinate, patients need to be knowledgeable of the benefits but also the risks that can be experienced once they are vaccinated. This includes the side effect profile of the vaccines which are flu-like symptoms, fever, chills, headache and inflammation at the injection site (1). There are also special cases where the vaccine could be dangerous for a patient, and a pharmacist is expected to point these out to patients at risk (53).

When counselling on the COVID-19 vaccine, the pharmacists have used their own personal experiences as a method of gaining the patients’ confidence in the vaccine. The pharmacists’ personal experience is evidence of authenticity of the COVID-19 vaccine to the patient. Therefore, the hesitancies may somewhat be eradicated, and vaccine confidence may be fostered. The theoretical framework can be inferred to the patients’ beliefs and behaviour which may be affected by the pharmacists’ advice (26).

Another useful method used by pharmacists is the use of statistics to validate advice and improve confidence, and trust in the COVID-19 vaccine. The patients may be unknowing of the vast amount of research and vaccine trials that is currently being performed, and when pharmacists bring this to their notice, they are convinced more easily (19).

While educating the patients, allaying fears, and debunking false information also forms part of the responsibility. Furthermore, World Health Organization (WHO) describes the current world situation as an “infodemic” which is when there is dissemination of incorrect information. It is therefore up to health professionals, including pharmacists, to dispel any misinformation (57). Patients are also exposed to conspiracy beliefs which can cause them to retaliate against preventative behaviours such as vaccination. Conspiracy theories are considered as information that has not been researched and proven but has been circulated into the public (58). In a pro-vaccination strategy, active competition encouraged. Competition is used to combat those who are anti-vaccination and promote inaccurate media (10).

When participants discussed the patient hesitancies, they have expressed that inaccurate religious rumours are amongst the most difficult to address (59). However, this can be overcome by correct information relay. Public awareness is a necessary measure to take to ensure that religious and cultural hesitancies are dispelled so that patients can make educated decisions so that vaccination occurs (60).

Moreover, there are patients who may not be concerned about the vaccine but are enquiring about the steps required to register to get vaccinated. The pharmacist is also a source of information for the logistical arrangements by the government (Perumal-Pillay, 2021). This includes registration for the patients on the vaccination online system as well as providing details of the closest vaccine centres convenient to the patients. Furthermore, the pharmacists also encourage discussion about the types of vaccines that are available as well as their dosage regimens.

The theoretical framework of this study can be applied patients’ behaviour as their decision to vaccinate will be based on the advice of the pharmacist. It can be assumed that the patients’ will be more accepting of the vaccine if the pharmacist advocates for vaccination, thus improving vaccine uptake (26). A sense of hope is fostered when the patient is able to view vaccination against COVID-19 as a social responsibility. This will prompt the patient to understand the urgency and necessity for them to vaccinate.

Once patients have dispelled any hesitancies, the pharmacist’s role advances into the provision of the vaccines. There are several benefits of utilizing pharmacists as vaccinators. Firstly, pharmacists can allow for a better response to the vaccine rollout strategy. Secondly, this will reduce the pressure on fellow healthcare professionals (Perumal-Pillay, 2021).
Utilization of pharmacies for COVID-19 vaccines are considered as a paradigm shift for pharmacy practice. This fosters a more direct clinical patient-pharmacist relationship (62). Participating in the vaccine programmes is considered to be an extension of the current work of the pharmacist, as pharmacists are educated on the topic of vaccination (Perumal-Pillay, 2021). This is an opportunity for the pharmacists to radically showcase their competences as health professionals (63). Due to the thermolabile nature of the vaccines, cold-chain management is necessary. This is an area of expertise of a pharmacist (64).

During the interviews, the pharmacists have commended themselves on exceeding their goals, and becoming excellent vaccine providers. This effort was also noted in pharmacies internationally (64, 65).

Those pharmacies who did not participate in the rollout were unwilling due to the immense responsibility associated with the provision COVID-19 vaccines. This requires an ample workforce and infrastructure to undertake the responsibility to ensure safe and effective vaccination (66). Smaller pharmacies may not be able to afford the resources or may lack space to accommodate large numbers of people that will be entering the pharmacy. These pharmacies can get involved by assisting patients with their online Electronic Vaccination Data System (EVDS) registration for vaccination.

Pharmacists have expressed that a lack of staff is a problem that is expected to be faced, or currently being faced by vaccination sites. This was a reason for pharmacies to step down from becoming a vaccination site. Human resources form part of the arrangements that need to be organized by the community pharmacy (66). Regular activities need to continue despite the increase in workload in the pharmacy. Therefore, more staff may need to be employed so that the pharmacy and the vaccination site can both run smoothly (67).

The next challenge that pharmacists may experience is the wastage of doses. One dose lost is one less person being vaccinated. Moreover, there are financial implications of lost doses. Therefore, adequate planning and forecast is required to prevent wastage. The vaccine batch cannot be shared with other pharmacies; thus, the entire batch needs to be used before the expiry date of the vaccines.

Furthermore, a major issue lies with pharmacists who vaccinate patients who do not have medical aid. The government has not given a distinct time frame as to when pharmacies will get paid for the doses as well as the administration fee. Medical aid patients are being covered with no difficulty. The government has not issued invoices to the pharmacies yet, therefore one of the major expenses for the pharmacists will be delayed. The pharmacists are running vaccine centres on the money earned by the medical aid schemes. Lastly a concern lies with electricity and Wi-Fi cuts, which are a common occurrence in SA (68).

Despite these concerns, many pharmacies have opted to become vaccination sites. In order to assume this responsibility, thorough planning is required to ensure this is a feasible venture. Using the theoretical framework, this will model the beliefs of the pharmacists, which will in turn affect their decision to become a vaccination site (26).

**Strengths And Limitations**

There were several strengths that should be noted. The study documents the experiences of pharmacists in a crucial period of a global pandemic as the data collection was conducted while the events of the vaccine rollout occurred. The study provided insight of how a developing country undertook vaccine rollout. The strategy employed by South Africa was discussed and the pharmacists’ roll therein was clearly stated, and their challenges faced can be addressed in future studies. Lastly, the data highlighted and gave due credit to the pharmacists for the impact they had in the rollout.

A limitation was that many pharmacists who were approached did not accept the request to be interviewed due to their increased workload during the pandemic as well as social unrest that occurred in Kwa-Zulu Natal in 2021. Furthermore, pharmacists may not have provided a completely honest response as the questions were subjective. Their opinion may have also changed with the progression of the pandemic. Some of the interviews were also conducted via online platforms, thus connectivity could sometimes be a reason for the unclear phrases from the participants. However, this was a rare occurrence, and did not compromise the study.
Conclusion

The pharmacists in this study perceive a very positive outlook on the COVID-19 vaccines. Despite their concerns, they have taken it or plan on taking it.

Although the rollout started slowly, and pharmacists were not prioritized, the rollout has now gained momentum, and pharmacists are pleased with this improvement.

Their role also expands over several aspects of pharmacy including providing vaccines, overseeing the pharmacy’s vaccine centres and education of the public on the COVID-19 vaccination. There are several challenges that are faced by the pharmacists. These include influx of patients, lack of staff, wastage of doses, financial reimbursements, and electrical power cuts.

The role of the pharmacists during the COVID-19 vaccination rollout is significant, and the perceptions of the pharmacists have been of a positive nature. Therefore, it can be concluded that pharmacists do have a positive influence on the uptake on the vaccines and are also playing a major role in the rollout of the vaccines in SA.

List Of Abbreviations

AIDS
Acquired Immune Deficiency Syndrome
COVID-19
Coronavirus Disease 2019
DoH
Department of Health
FIP
International Pharmaceutical Federation
GPP
Good Pharmacy Practice
HIV
Human Immunodeficiency Virus
NICD
National Institute for Communicable Diseases
SARS-CoV-2
Severe Acute Respiratory Syndrome Coronavirus
SA
South Africa
TB
Tuberculosis
TPB
Theory of Planned Behaviour
TRA
Theory of Reasoned Action
UK
United Kingdom
USA
United States of America
WHO
World Health Organization
Declarations

Ethics approval and consent to participate

Ethical approval was obtained from the Humanities and Social Sciences Research Ethics Administration, University of KwaZulu-Natal (Protocol Reference: HSSREC/00002559/2021) before commencement of the study. Participant confidentiality was maintained throughout the study. Informed consent and permission for audio recording was sought from each participant. Gatekeeper’s permission was sought when the interviews were conducted from a place of work.

Consent for publication

Not applicable

Availability of data and materials

The datasets used and/or analysed during the current study are not publicly available to maintain the confidentiality agreement between the researcher and the participant.

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Authors Contributions

ST designed the methodology, collected data, analysed and interpreted data and wrote the manuscript. VB and RP supervised the research, contributed to the research methodology, and provided guidance with regards to generating themes and discussing the data. RSM contributed to the analysis and interpretation of data. All authors read and approved the final manuscript.

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References


**Figures**

**Figure 1**

Flowchart presenting the themes and subthemes that emerged from the study