


## PHARMACY PRACTICE

# Public hesitancy to COVID-19 vaccine and the role of pharmacists in addressing the problem and improving uptake

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### Abstract

COVID-19 is one of the worst pandemics in recent human history, causing huge health, economic, and psychosocial damage. Since the pandemic hit, several unsubstantiated claims regarding exposure, transmission and management have been disseminated. Misinformation and associated public confusion now extend to the COVID-19 vaccines, spanning from claims based on possible links between some vaccine types and rare blood clots, to baseless claims. As a result, the public's trust in COVID-19 vaccines has been eroded, fuelling an already troubling trend of vaccine hesitancy. As medication experts and the most accessible healthcare providers, pharmacists are well equipped with the required skills and knowledge to improve COVID-19 vaccine uptake by taking roles that range from dispelling myths, to providing reliable evidence-based information, through to vaccine administration. This paper discusses public hesitancy to COVID-19 vaccines, major contributing factors, and the role pharmacists can play in reducing hesitancy and increasing vaccine uptake.

**Keywords:** clinical pharmacists, COVID-19, pharmacists, pharmacy practice, vaccine hesitancy.

### INTRODUCTION

COVID-19 is one of the worst pandemics that has challenged humankind with its continued multidimensional devastation. As of 22 October 2021, more than 243 million people have been diagnosed with COVID-19 globally resulting in nearly 5 million deaths.<sup>1</sup> The actual number of deaths is expected to be much higher than officially reported due to underreporting and deaths attributed to other causes.<sup>2</sup> Governments and societies all over the world are struggling to cope with the immense health, psychosocial, and economic crises caused by the pandemic. The world has, therefore, anxiously waited for the discovery of an effective vaccine,

which is considered to be a panacea to contain the pandemic and its multifaceted challenges. The unprecedented collaboration between pharmaceutical industries, governments, and academic institutions led to expedited vaccine development, with more than 127 vaccines currently in the pipeline. The vaccine developed through the collaboration of AstraZeneca and Oxford University (AZD1222) is among the earliest vaccines to obtain early approval. However, the rollout of this vaccine was followed by unexpected decisions by governments to suspend or pause its rollout due to rising concern of a possible link with potentially fatal rare blood clots.<sup>3</sup> Later, there were also reports of a possible link between Johnson and Johnson's vaccine and blood clotting.<sup>4</sup> These safety concerns, along with the widespread COVID-19 misinformation, have contributed to vaccine hesitancy in communities all over the world.

The World Health Organization (WHO) Strategic Advisory Group on vaccines and immunisation defined

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vaccine hesitancy as 'delay in acceptance or refusal of vaccination despite the availability of vaccination services' and is identified by the WHO as one of the top 10 threats to global health.<sup>5</sup> Vaccine hesitancy and subsequent low uptake of vaccines are driven by multiple factors that may vary across vaccines and population groups. These include negative attitude to vaccines, perceived risk, perceived vaccine efficacy, physician recommendation, and access to vaccines. A 2020 systematic review revealed that hesitancy to COVID-19 vaccines is also affected by perceived political interference and concerns over the expedited vaccine development process.<sup>6</sup>

One of the strategies that has been used to reduce hesitancy to and increase uptake of COVID-19 and other vaccines is involving pharmacy professionals in various roles ranging from information provision to vaccine administration. Pharmacists' existing skill and ability to deliver service with minimal additional training and widest accessibility enable them to effectively contribute to the success of vaccination programs.<sup>7</sup> Despite challenges posed by COVID-19 on pharmaceutical care, pharmacy professionals have been front-line health care workers in the response to the pandemic. Pharmacists have also taken the responsibility to administer COVID-19 vaccines in several countries including the US, Canada, and the UK and Australia.<sup>7</sup> This paper focuses on factors contributing to COVID-19 vaccine hesitancy and the role of pharmacists in increasing access to and uptake of the vaccines.

## FACTORS CONTRIBUTING TO COVID-19 VACCINE HESITANCY

Studies show that hesitancy to COVID-19 vaccines is caused by numerous factors. Some of these are generic factors that have been known to previous vaccines while others are unique to COVID-19. The following section provides a brief summary of the main factors contributing to COVID-19 vaccine hesitancy.

### Low confidence in the safety and efficacy of vaccines

Unlike the usual drug development process, which typically takes over a decade on average, the vaccines for COVID-19 were developed within about a year. This expedited vaccine development became a key contributor to the growing vaccine hesitancy.<sup>8</sup> Although the introduction of COVID-19 vaccines is important progress, communicating the safety of the vaccines has proven difficult, as shown by confusing rollout decisions of governments.<sup>3</sup> This was further fuelled by the rising

concerns of a possible link between AstraZeneca's and Johnson and Johnson's vaccines and blood clotting.<sup>4</sup> The risk of thromboembolic complications after receiving COVID-19 vaccines is relatively small compared with the risk of deep vein thrombosis/pulmonary embolism in the population. Despite the high benefit to risk ratio evidence favouring vaccination, regulatory authorities in many countries have been inconsistent in their decisions as to continue or suspend the use of the AstraZeneca vaccine, which was a major contributor to vaccine hesitancy. As of mid-February 2021, just one month before the announcement of AstraZeneca safety concern, over half (58%) of respondents in 15 countries reported that they would definitely get a COVID-19 vaccine if it were made available to them, and two-thirds of respondents (68%) trusted COVID-19 vaccines 'very much' or 'moderately'.<sup>9</sup> However, the public's confidence in COVID-19 vaccines – particularly that of AstraZeneca's – has nosedived since the first week of March 2021 amid the AstraZeneca safety conundrum.<sup>10</sup> For instance, a YouGov survey in March 2021 found that 61% of French respondents perceived the Oxford/AstraZeneca vaccine to be unsafe – an 18% increase in just 1 month.<sup>11</sup> Similar findings were reported in Germany, with the proportion of respondents perceiving it 'unsafe' increasing from 40% to 55%.<sup>12</sup> The reporting of COVID-19 cases among fully vaccinated individuals was another important phenomenon that increased doubt in efficacy and therefore hesitancy to receive the vaccine.<sup>13</sup>

### Antivaccination beliefs and attitudes

Antivaccination beliefs and attitudes and the impact of antivaccination groups' ideologies and conspiracy theories are other major factors driving the growing COVID-19 vaccine hesitancy. These conspiracy theories range from considering the virus as non-existent to an attempt to control the world population in the form of vaccination. It also prevented their believers from adhering to important preventive measures and contributed to vaccine hesitancy.<sup>14</sup> The widespread misinformation associated with COVID-19 and the expedited vaccine development process have been fertile ground for antivaccination messages of unsubstantiated claims, including reports of death in COVID-19 vaccine trials and presenting flu vaccines as increasing the risk of COVID-19.<sup>15</sup>

### Lack of trust in the system that promotes and administers vaccines

Public trust in governments and major organisations such as WHO has been eroded in the first weeks and months of the pandemic, due to alleged indecisiveness

and slow responses. For example, WHO declared the outbreak a global pandemic on 11th March 2020, which was only after many countries did so nationally. Political and ideological differences by political actors and other influential parties along with the mixed messaging by authorities may have contributed to the disparate opinions held by the populace, and hence leading to mistrust by some towards governments. The political atmosphere, given many countries pursued a nation-based approach in tackling the pandemic than a global one earlier on, had weakened multilateral institutions like the WHO.<sup>16</sup> This has resulted in continuing doubt in recommendations of governments and health officials to take COVID-19 vaccines. A study in Australia found that people who have low confidence in the health system and those who believe a lot is being made of COVID-19 are less willing to receive a vaccine.<sup>17</sup>

### **Socioeconomic and demographic factors**

Hesitancy to COVID-19 vaccines has also been affected by socioeconomic and demographic factors such as age, gender, education, income, and geographic location or related cultural issues.<sup>18</sup> Most studies found younger respondents,<sup>18,19</sup> low-income individuals,<sup>18</sup> respondents with lower education level,<sup>19</sup> and those living in rural areas<sup>18</sup> to be more hesitant to take COVID-19 vaccines. People with lower health literacy and ethnic minority groups have also been frequently observed to have higher levels of hesitancy to COVID-19 vaccines.<sup>20</sup> Evidence-based information on the vaccines may not be readily accessible to people with lower education, ethnic minority groups, and those living in rural areas, which contributes to greater hesitancy in these groups.<sup>21</sup>

### **Perceived risk of COVID-19 infection and seriousness**

Individuals with elevated perceived COVID-19 risk were frequently more willing to be vaccinated.<sup>22</sup> Study respondents who perceived COVID-19 as a severe disease with potential hospitalisation and mortality outcomes were more willing to receive a vaccine.<sup>22</sup> Being infected with the virus or having acquaintance with someone who was infected with COVID-19 has a significant positive association with willingness to be vaccinated.<sup>23</sup>

### **THE ROLE OF PHARMACISTS IN ADDRESSING VACCINE HESITANCY**

Community pharmacists can play a crucial role in vaccination services benefiting from their increased

accessibility and professional expertise. The following sections explain their potential role education, and demystifying unfounded claims, benefit to risk ratio analysis, and identifying and referral of patients with potential harm from vaccine adverse reactions.

### **EDUCATING THE PUBLIC AND OTHER HEALTH PROFESSIONALS AND NEUTRALISING FALSE BELIEFS ABOUT COVID-19 AND ITS VACCINES**

Pharmacists are front-line health workers and play an important role in educating the public to reduce vaccine hesitancy and increase access and uptake, for multiple reasons. First, pharmacists have the required knowledge and skills to advise fellow health professionals and educate the public and incorporate evolving information on COVID-19 vaccines in their services. Second, pharmacists are readily accessible and have ample opportunity to identify and neutralise emerging vaccine-related misinformation. Education should focus on neutralising the ill-founded misinformation and restoring public confidence, benefit-to-risk analysis of taking a COVID-19 vaccine, and how to spot vaccine side effects warranting special attention, treatment, and referral. For example, a recent systematic review documented that the most commonly reported role of pharmacists in vaccination across 25 low- and middle-income countries was vaccine advocacy and education.<sup>24</sup>

COVID-19 has been surrounded by many false beliefs, confusing, fake information as well as fake medicines.<sup>25</sup> Such falsified beliefs could have potentially contributed to the growing vaccine hesitancy and low vaccine uptake. Therefore, pharmacists, both in hospital and community settings, should aim to keep abreast of the evolving evidence on COVID-19 and its vaccines and inform the public accordingly. Pharmacists can also refer their customers to reliable information sources on COVID-19 vaccines, for example, the Therapeutic and Goods Administration (Australia) website.

### **A BENEFIT TO RISK RATIO ANALYSIS OF TAKING THE COVID-19 VACCINE**

While the decision to receive a COVID-19 vaccine is an individual's choice, pharmacists have the responsibility to carefully weigh the benefits and risks of vaccination and educate the public to enable informed decision making. Pharmacists may use their knowledge and experience, research evidence, and evolving COVID-19 related information to educate the public and encourage

rational decision-making. An easy way of communicating the benefit to risk analysis, especially to individuals with lower literacy, can be asking them to consider the possible scenario with and without taking the vaccine. This can be an informative conversation with the clients to help them weigh the risks of getting blood clots or other vaccine side effects and the potential consequences of not being vaccinated. The provision of such information may include specific statistics such as the high risks of contracting the virus, becoming ill, hospitalisation/death or, on the other hand, the risk of getting blood clots or other side effects from the vaccine.

### **IDENTIFYING VACCINE SIDE EFFECTS WARRANTING SPECIAL ATTENTION, TREATMENT, AND REFERRAL**

Pharmacists' communication about the vaccines needs to be evidence-based, transparent, and tailored to the level each client can easily understand. For instance, people receiving the vaccines, particularly those with known side effects to COVID-19 and other similar vaccines, should be adequately educated to seek timely medical attention when they observe concerning signs and symptoms.

### **COMMUNITY TRUST, INCREASED ACCESSIBILITY AND THE EXPANDING ROLE OF PHARMACISTS IN VACCINATION-RELATED SERVICES**

Increased accessibility, existing relationships with local community members, and knowledge and experience accumulated over years of service are some of the important factors enabling pharmacists to effectively contribute to the success of these strategies. Pharmacists and their services are easily accessible, particularly in rural and remote areas of many countries. This high level of accessibility has given community pharmacists important roles in vaccination, ranging from evidence-based information provision and motivating their clients to vaccine administration (depending on the regulation of the country they practice in).<sup>7</sup> This indicates the expanding service of pharmacists related to vaccination and the potential role they can play in COVID-19 vaccination. In fact, an important step in the effort to combat hesitancy and increase uptake of both COVID-19 and other vaccines has been bringing pharmacy professionals on board within a wide range of roles.

Global surveys show that the number of countries where pharmacists are authorised to administer vaccines

increased from 13 to 26 between 2016 and 2020; 16 other countries are in the process of authorising pharmacists as vaccine administrators. Therefore, pharmacists in these countries play a major role in the administration of 36 types of vaccines including flu, hepatitis B, and typhoid.<sup>7</sup> In the UK, community pharmacies have been providing a wide range of vaccination-related services for a long time, including administration of travel vaccines, influenza and other seasonal vaccines, hepatitis B vaccines, and so on.<sup>26</sup> Similarly, community pharmacists have been contributing to vaccination-related services in countries such as the US and Canada even before COVID-19.<sup>27,28</sup> In Australia, although community pharmacists have had limited opportunity to contribute to vaccination services, there have been encouraging trends in recent years and particularly in the fight against COVID-19.<sup>29</sup> In July 2021, the Australian government invited appropriately trained pharmacists to join the COVID-19 national vaccine rollout and these have since become a major point of access for COVID-19 vaccines across the country including in regional and remote areas. More than 3900 community pharmacies in the country are now administering the COVID-19 vaccinations, including AstraZeneca and Moderna vaccines.<sup>30</sup> Community pharmacy involvement in the vaccine rollout has seen an increased uptake, as well as decreasing vaccine hesitancy. According to the most recent data, in Australia, vaccine hesitancy is now at its lowest (6.9%)<sup>31</sup> and 70.83% of the population is double vaccinated as at 22 October 2021.<sup>32</sup>

In the era of COVID-19, optimal vaccination access also includes creating a COVID-safe environment in which the public feels safe to both to seek information and receive the vaccination. This may include efforts to enforce public health measures proven effective in reducing infection transmissions, such as sanitising and physical distancing. In addition, community pharmacies should provide an opportunity for online booking and collection of needed information so that in-pharmacy waiting times can be kept minimal. Implementing these strategies can instil confidence in community members who may refrain from taking the vaccine for fear of getting the infection by attending health facilities.

A recent paper by our team has provided useful recommendations on the potential role of pharmacists in fighting misinformation and other aspects of the health care response needed in the course of the pandemic.<sup>33</sup> While most of the recommendations provided in the previous work remain relevant, Table 1 below summarises some additional roles that pharmacists can assume in the effort to reduce hesitancy to COVID-19 vaccine hesitancy and increase vaccination access and uptake.

**Table 1** Potential roles of community pharmacists in reducing COVID-19 vaccine hesitancy and increasing vaccine access and uptake

Role	Role description
Serving as source of information and vaccine administration	This may include staying up to date with the evolving evidence on COVID-19, its vaccines, and therapeutics so that they can serve as a reliable information source to other fellow health professionals, patients, and the public. To this end, identifying and making the best use of available credible information sources is vital. Pharmacists should tailor their communication to specific clients in an easily digestible form to help their customers to make rational vaccination-related benefits to risk analysis and decision making. Pharmacy professionals should aim to use both traditional and social media, whenever possible, to ensure effective reach to the public.
Debunking myths	Community pharmacies have been increasingly contributing to various vaccination programs and now to the COVID-19 vaccination in multiple countries including the USA, the UK and Australia. <sup>7,34</sup> This expands the scope of care provided by pharmacists and leads to an expanded public health role for pharmacists in a post-pandemic world. Pharmacy professionals should be prepared to proactively raise and discuss the issue of vaccination with their clients whenever the opportunity arises. Such opportunities may include when counselling patients on their medications, responding to queries, selling masks, hand sanitisers, or over-the-counter medications. Pharmacists are trained and experienced in actively listening to their clients to identify emerging falsified COVID-19 and vaccine-related information and provide evidence-based information or direct their customers to trusted information sources such as professional associations' websites.
Health promotion	Pharmacists can serve as role models by receiving the vaccines themselves and reiterating the importance of taking one to other health professionals and their clients. Pharmacies can also promote vaccination through the preparation of relevant in-store audio-visuals and posters to disseminate evidence-based information on COVID-19 and the relevance of vaccination. Such approaches have been observed to be effective in bringing desired health behaviour changes. <sup>35</sup> The wide accessibility of pharmacies particularly provides them with the unique opportunity to use their point of care to promote vaccination, especially in remote and rural areas where vaccination and related information would be limited. Pharmacists can also promote COVID-19 vaccination through targeted campaigns on weekends, institutionalized campaigns, television advertisements, and radio jingles.
Ensuring safety	This may include efforts such as arranging vaccination appointments in a way that ensures shortest possible stay of a minimal number of clients at vaccination areas and encouraging mask wearing and providing hand sanitisers.
Education	Pharmacists can use their encounter with vaccine recipients as a unique opportunity to educate the public on how to spot and what to do when vaccine side effects warranting special attention, treatment, and referral, happen.
Research	Where possible, pharmacists should engage in research to contribute to the search for evidence informing policy and practice. For instance, researchers from academic and research institutions may collaborate with community pharmacists to assess the public's knowledge, attitude, and experience related to COVID-19 as well as its vaccines.

## CONCLUSION

The COVID-19 journey has been fraught with multilayered challenges, most of which continue to be relevant to date. The development and rollout of COVID-19 vaccines is welcome progress, but has been plagued with operational challenges and vaccine hesitancy from the community. The uncertainties associated with safety issues and growing hesitancy to COVID-19 vaccination have seemed to erode public trust, hindering timely uptake of the vaccines. Factors contributing to increasing vaccine hesitancy include, but are not limited to, misinformation and concerns over vaccine safety. Strategies to reduce vaccine

hesitancy and increase vaccine uptake include public education, behavioural changes, creating an enabling environment, increasing motivation, and working through social influences. Pharmacists can play a pivotal role as trusted COVID-19 vaccination advocates, educators, and vaccine administrators depending on the rules and regulations of relevant jurisdictions.

## CONFLICT OF INTEREST STATEMENT

The authors declare that there are no financial or other relationships that might lead to a conflict of interest.

## AUTHORSHIP STATEMENT

All listed authors comply with the journal's authorship policy.

## ETHICS STATEMENT

As a pharmacy practice narrative review, ethics approval was not required.

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