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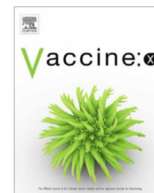

# Understanding the factors that influence communication about COVID-19 vaccines with patients: Perspectives of Australian immunisation providers

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ABSTRACT

*Background:* COVID-19 immunisation providers have been at the forefront of the pandemic, and their ability to communicate effectively with patients is key to encouraging COVID-19 vaccine acceptance and uptake. This study explored providers' perspectives on the factors influencing communication with patients about COVID-19 vaccines.
*Methods:* We used an explanatory-sequential mixed-methods approach to conduct the study between December 2021 and March 2022. Phase I involved a cross-sectional survey with immunisation providers in New South Wales ($n$ = 341; 189 general practitioners, 118 nurses and 34 pharmacists), followed by Phase II: semi-structured, in-depth qualitative interviews ($n$ = 19; 10 nurses, 9 pharmacists). We generated descriptive results for the survey. We analysed the qualitative data thematically using an inductive approach.
*Results:* Almost half of survey participants reported communicating often with people who were hesitant about COVID-19 vaccines (49 %; 166/341), however, 21 % (71/341) reported inadequate time to address concerns during consultations. Interview participants reported communication challenges, including time constraints, difficulties addressing and eliciting patient concerns, and keeping up to date with changing information. Conversely, interview participants reported that easy access to government information resources, time to learn about COVID-19 vaccines proactively, knowing about and being able to use tailored strategies to support Aboriginal and Torres Strait Islander and CALD patients were helpful when communicating with patients.
*Conclusions:* Immunisation providers play an important role in patient vaccine acceptance and uptake. Our findings indicate that whilst providers were largely confident in their interactions with patients, further communication support would strengthen providers' skills in communicating with patients who have questions and concerns about COVID-19 vaccines.
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## Introduction

The COVID-19 pandemic has resulted in social and economic impacts globally. COVID-19 vaccines were one of many solutions to control the pandemic and facilitate the return to life before the pandemic [1]. However, the availability of a vaccine alone does not guarantee efficient vaccine uptake. An individual's uptake of a vaccine is influenced by a range of factors including their vaccine perceptions, ease of access to vaccine services, knowledge about vaccinations [2] and recommendations from trusted healthcare workers [3].

COVID-19 immunisation service delivery in Australia has been a critical component of the national response to the pandemic. The Australian Government's COVID-19 vaccine roll-out began in February 2021 [4], with vaccines administered through GP clinics, state-run vaccination hubs, and community pharmacies [5]. Initial phases of the roll-out targeted priority populations, including healthcare workers, aged care residents and the elderly, before eventually opening up to the wider population [4]. As of March 2023, over 23 million doses have been administered across the country [6].

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Whilst the vaccine rollout has been largely successful, with > 95 % eligible Australian adults receiving at least one dose of the vaccine [6], it has not been without challenges, especially in the initial phase of the roll-out. Key challenges included vaccine supply shortages, shipment delays [7], confusion around the eligibility criteria, and logistical issues [8]. Some community members have also expressed concerns about vaccine safety, side effects and long term effects of COVID-19 vaccines [9]. Some have also reported suboptimal public communication about COVID-19 vaccination which may have contributed to growing COVID-19 vaccine hesitancy in the wider community [10,11].

Globally, much of the vaccine communication literature has focused on the importance of effective communication with patients about COVID-19 vaccines, and the strategies to achieve it [12–16]. Strategies include increasing COVID-19 vaccine knowledge and awareness through the dissemination of culturally- appropriate resources [15] and messaging that promotes pro-social behaviours [16]. There is little evidence, however, on what makes it easier or more difficult to implement them. Immunisation providers are trusted sources of vaccination information for patients, and a strong provider recommendation is associated with better vaccine uptake and acceptance[17]. Understanding of immunisation providers' experiences of communicating with patients about COVID-19 vaccines can inform strategies for supportive conversations with patients about COVID-19 and beyond.

The aim of this study was to explore immunisation provider perspectives (general practitioners, nurses, and pharmacists) on the factors influencing communication with patients about COVID-19 vaccines in New South Wales (NSW), Australia. At the time this study was conducted, Australia had begun the COVID-19 booster roll-out program and all adults aged 18 years and older were eligible for the booster vaccine[18]. Studies have shown that having a third dose of COVID-19 vaccine is effective in preventing patients from severe COVID-19 related outcomes [19,20].

## Methods

### *Study design*

We used an explanatory-sequential mixed methods approach of a quantitative survey followed by qualitative interviews to explore the quantitative findings in more depth [21]. We obtained ethics approval from the Sydney Childrens Hospital Network (SCHN), research ethics committee (2021/ETH00181).

## Phase I: Survey

### *Participants*

Survey participants included immunisation providers practicing in NSW. Participants were eligible if they were a general practitioner (GP), nurse or pharmacist providing COVID-19 vaccines, were 18 years or older, and spoke English.

We recruited participants between January and March 2022 using multiple approaches. We recruited GPs via a webinar run by continuing professional development provider HealthEd [22]. Attendees were asked to participate in the survey at the end of their webinar. We also recruited nurses, pharmacists, and GPs via emails to an immunisation provider mailing list maintained by an Australian research organisation, NCIRS (National Centre for Immunisation Research and Surveillance) [23]. Interested participants clicked on an embedded link, which directed them to the online survey. Participation was voluntary.

### *Survey design*

We developed our cross-sectional, online survey using our research questions and informed by previous literature [24–26]. We administered the survey online using the web-based survey platform, Qualtrics. To ensure data quality, we set up the survey platform to require responses to all questions and to restrict participants from submitting incomplete surveys. We stored the survey data in a secure, password-protected database accessible only to the research team.

We collected socio-demographic data (age, gender, location, profession), length of time as an immunisation provider, and assessed immunisation provider experiences and needs in terms of having supportive conversations about COVID-19 vaccines with their patients (nine items, see Table 2). We also asked participants to indicate their interest in participating in in-depth interviews.

The survey consisted of multiple choice questions, likert-scale questions and free-text response questions. Frequency questions used the following scale: always, often, sometimes, rarely, and never. Agreement questions used the following scale: strongly agree, agree, neutral, disagree and strongly disagree. The free-text response questions are not reported in this paper. The survey is available as supplementary material (Supplementary Table 1).

The survey took approximately 10 min to complete. Once survey was complete,we thanked the participants and provided them with the research team's contact information in case they had any questions or concerns about the study.

We pilot-tested the survey with a small group of immunisation providers from NCIRS networks for appropriateness and usefulness using a cognitive interviewing approach. Cognitive interviewing is a technique used to check if survey questions achieve their intended purpose [27]. This qualitative method involves conducting interviews with a group of participants who have the same characteristics as the survey respondents who will be completing the final draft of the survey [27]. In our study, we used a convenience sample of immunisation providers. Each participant completed the survey questions while thinking aloud, and the interviewer (IA) asked follow-up questions to probe for understanding and identify potential issues with the questions. We

**Table 1**
Demographic characteristics of participants.

| Demographic Characteristic | | Total ($n$ = 341) | % |
|---|---|---|---|
| Age | | | |
| | 20–29 | 7 | 2.1 |
| | 30–39 | 29 | 8.5 |
| | 40–49 | 46 | 13.5 |
| | 50–59 | 100 | 29.3 |
| | 60–69 | 103 | 30.2 |
| | 70–79 | 51 | 15.0 |
| | 80 or over | 5 | 1.4 |
| Gender | | | |
| | Male | 100 | 29.3 |
| | Female | 241 | 70.7 |
| Profession | | | |
| | General Practitioner | 189 | 55.4 |
| | Nurse | 118 | 34.6 |
| | Pharmacist | 34 | 10.0 |
| Practice location | | | |
| | Urban | 210 | 61.6 |
| | Regional | 99 | 29.0 |
| | Rural | 32 | 9.4 |
| Length of time as an immunisation provider | | | |
| | <year | 57 | 16.7 |
| | >1 year | 284 | 83.3 |

**Table 2**
Immunisation provider experiences on communicating about COVID vaccines.

| Survey item | Often (Always, Often) n (%)* | Sometimes n (%)* | Rarely (Rarely, Never) n (%)* |
|---|---|---|---|
| Thinking about the past week, how often are you having conversations about COVID-19 vaccines with patients? | 256 (75.1) | 59 (17.3) | 26 (7.7) |
| How often are you having conversations with patients who have concerns about COVID-19 vaccines? | 166 (48.7) | 105 (30.8) | 70 (20.5) |
| How often are you recommending COVID-19 vaccination to your eligible patients? | 269 (78.9) | 44 (12.9) | 28 (8.2) |
| I have conversations with patients about: - COVID-19 vaccine safety (risks/benefits) | 295 (86.5) | 33 (9.7) | 13 (3.8) |
| I have conversations with patients about: - COVID-19 vaccine efficacy | 283 (83.0) | 47 (13.8) | 11 (3.2) |
| I have conversations with patients about: - The importance of getting vaccinated against COVID-19 | 304 (89.2) | 24 (7.0) | 13 (3.8) |
| I have conversations with patients about: - Myths and misinformation about COVID-19 vaccination | 246 (72.1) | 67 (19.6) | 28 (8.2) |
| | **Agree (Strongly agree, Agree)** | **Disagree (Disagree, Strongly Disagree)** | **Neutral** |
| I am confident informing my patients about the risks and benefits of COVID-19 vaccines | 333 (97.7) | 3 (0.9) | 5 (1.5) |
| I am confident in my skills and ability to motivate patients who have concerns to get COVID-19 vaccines | 306 (89.7) | 8 (2.4) | 27 (7.9) |
| I have enough time during the consultation to address the patient's questions and concerns about COVID-19 vaccines | 240 (70.4) | 44 (12.9) | 57 (16.7) |
| I have access to the information about COVID-19 vaccines that I need to support conversations with my patients | 300 (88.0) | 10 (2.9) | 31 (9.1) |
| I have the necessary resources (e.g., decision aids, factsheets) to have supportive conversations with my patients about COVID-19 vaccines | 269 (78.9) | 25 (7.3) | 47 (13.8) |

*Percentages may not add up to 100 % due to rounding errors.

analysed the interview data thematically to identify common themes. We then refined the survey questions, based on the results of the cognitive interviews, to improve the survey questions and enhance the validity and reliability of the questions.

We obtained informed consent from all participants prior to their participation in the survey. We informed them about the purpose of the study, and their rights as research participants. We kept all responses confidential and anonymous, and removed any identifying information from the data prior to analysis.

*Data analysis*

We used SPSS version 25 to generate descriptive statistics including frequencies and proportions.

When generating proportions, we collapsed variables into three main categories due to low variability between the categories of responses (see Table 2). For the frequency questions, we collapsed the categories into Often (Always & Often), Sometimes (Sometimes) and Rarely (Rarely & Never). For the agreement questions, we collapsed the variables into Agree (Strongly Agree & Agree), Neutral (Neutral) and Disagree (Disagree & Strongly Disagree).

We had also planned to look for correlations between the different groups using parametric (ANOVA) tests for questions with Likert scales (which were to be converted to continuous variables), and non-parametric (Chi-squared) tests for all other questions. However, due to low recruitment numbers, especially with pharmacists, we were unable to proceed with this part of the original analysis plan.

## Phase II: Interviews

*Participants*

Participants were eligible to participate in interviews if they were a GP, nurse, or pharmacist providing COVID-19 vaccines in NSW, were 18 years or older and spoke English.

We recruited participants using a combination of methods. Firstly, at the end of our Phase I survey, we included a question asking participants if they would be interested in being contacted to participate in an interview. We then contacted those who consented to participate to arrange an interview. Secondly, we also recruited by sending email invitations to a database of Australian immunisation providers, maintained by NCIRS.

*Data collection*

The research team developed an interview guide which aimed to elicit in-depth responses to topics raised in the Phase I survey. We included open-ended questions and prompts to explore providers' experiences discussing COVID-19 vaccination with patients, their perceptions of what made those discussions easier or more difficult, and the types of resources and support providers would find useful. To ensure confidentiality, information regarding names, ages and locations were omitted from the analysis. The full interview guide is available as supplementary material (Supplementary Table 2). IA conducted all semi-structured interviews (20–40 mins in length) between December 2021 and February 2022 using telephone or video-conferencing platform Zoom. Interviews began after participants confirmed they had read the information sheet detailing the purpose of the study and consented verbally.

*Data analysis*

We audio-recorded interviews and sent them for transcription. We used an inductive, thematic approach to analysis and we also engaged in a collaborative approach to analyse the data. This involved comparing findings across cases and providing interpretations by developing sub-themes and themes [28]. Pairs of researchers read each transcript, generated analysis notes in Word, and created a combined analysis file. The team (IA, MS, KB and BB) then met weekly to discuss the combined analyses, reconcile differences in interpretation and agree on emerging categories. Similar words and phrases were grouped into sub-themes and these informed the development of the overarching themes. After analysing the first 8 transcripts, IA drafted a framework of key sub-themes and overarching themes. IA then adapted and refined the framework with new insights which the group generated from the remaining interviews. Once that framework was finalised, the team identified

overarching themes informed by the categories, sub-themes and interview questions.

## Results

### Phase I: Survey

The initial sample had 383 participants. 38 responses were incomplete and excluded. A further 4 participants were not immunisation providers and were excluded. The final sample included 341 participants, of which 55.4 % (189/341) were GPs, 34.6 % (118/341) were nurses and 10.0 % (34/341) were pharmacists. Table 1 summarises the demographic characteristics of the participants.

Table 2 shows the results of survey items exploring immunisation provider communication experiences and needs relating to COVID-19 vaccination. Most (75 %, 256/341) respondents reported communicating often with patients about COVID-19 vaccines. Almost half 49 % (166/341) reported communicating often with people who were hesitant about COVID-19 vaccines. Furthermore, 20 % (67/341) reported sometimes or rarely recommending COVID-19 vaccines to their eligible patients.

Most providers reported communicating often about key topics such as vaccine safety (87 %), vaccine efficacy (83 %), and the importance of vaccinating (89 %). A smaller majority (72 %) reported communicating often about COVID-19 vaccine myths and misinformation with their patients.

Almost all participants reported feeling confident informing patients about risks and benefits of COVID-19 vaccines (98 %, 333/341) and motivating patients to vaccinate (90 %, 306/341). Most (88 %, 299/341) agreed they had enough information to support their conversations with patients. In terms of potential barriers to effective communication, however, approximately 1 in 5 (21 %, 71/341) were neutral or disagreed that they had enough time to address patients' concerns during consultations.

Table 3 shows the interventions/resources that providers indicated would help them communicate with patients. 2 in 3 (66 %) agreed there was a need for resources for patients (e.g., factsheets and brochures) and >1 in 3 (37 %) indicated they would find conversation guides and training about communicating with patients about COVID-19 vaccines useful.

### Phase II: Interviews

A total of 19 immunisation providers participated in the interviews. Of these, 10 were nurses and 9 were pharmacists. GPs were also invited to the interviews however, they were not available to participate.

We identified two overarching themes: factors identified by providers that made it difficult, and those that made it easier to communicate with patients about COVID-19 vaccines. We report findings by themes and sub-themes.

### Factors that made it difficult to communicate with patients about COVID-19 vaccines

Participants indicated that the following four factors made it difficult to communicate with patients:

#### *Time constraints on vaccine discussions*

Participants reported feeling pressured for time during the consultation. Some participants used words such as *"succinct"* and *"efficient"* to describe their consultation approach (including vaccination conversations) in what they perceived as a fast-paced work environment such as a community pharmacy or a vaccination hub. One nurse working in a vaccination hub stated:

> "It's a high throughput job. We're only meant to take a few minutes per patient, sometimes even less. I can't direct, show them websites to the leaflets and things like that." (P18, Nurse)

The quote above illustrates an experience of many participants, who perceived that the short consultation time did not allow them to probe patients' vaccination concerns or address them. This was further accentuated in community pharmacies, as pharmacists did not feel adequately reimbursed for the amount of time, work and effort that they had to put into each consultation:

> *"The payment is ridiculous, especially paying $16 for a child. It can take up to 45 min with a child that's struggling. You have the vaccine, the parent's there and you're sitting in there talking to them, trying to comfort them. I have pharmacists who would sit there for 45 min and they're exhausted, they're mentally and physically exhausted. Payments are not enough."* (P14, Pharmacist)

#### *Keeping up to date with changing information*

Many participants reported struggling with keeping up to date with the rapidly changing information about COVID-19 vaccines. In addition, some referred to the governmental information about COVID-19 vaccines not being openly available to them, and instead learning about vaccines after public health announcements were made on the news. Some used expressions such as "*being kept in the dark*" *and "being thrown into the deep end*" in describing access to vaccine information This contributed to feelings of not being supported by the government. Some participants expressed anger towards the government and concerns about the implications this may have on undermining public trust in health services. One pharmacist expressed their dismay:

> "We need backup, we need support. It is ridiculous how often information is released through the news before it comes to us. It's embarrassing. It just makes us look like a couple of fools, and really undermines the trust that the public has in our expertise." (P15, Pharmacist)

**Table 3**
Immunisation provider communication needs relating to COVID-19 vaccination.

| Survey item *(n = 341)* | | *n* (%) |
|---|---|---|
| Which of the following interventions would help improve your communication with patients about COVID-19 vaccines. | | |
| | Online training about communicating with patients | 126 (37.0) |
| | Information for myself to learn more about COVID-19 vaccines | 125 (36.7) |
| | Resources for patients (factsheets, brochures etc) | 224 (65.7) |
| | Conversation guides for immunisation providers | 127 (37.2) |
| | Patient Decision Aids | 144 (42.2) |
| | Central repository of information and resources | 109 (32.0) |

Some community pharmacies reported taking measures into their own hands by hiring a registered nurse who was up-to date with the information to answer patient queries:

"I had access to a registered nurse who continually researchers all the current information on COVID. Therefore, when people come to inquire about it, we have someone there who can verbally give them the information they require, or we do lots and lots of printouts from the official websites and from the data that is available, which is the scientifically back data and lots of hearsay data." (P2, Pharmacist)

### *Difficulties eliciting and addressing patient concerns*

For some participants, having conversations with vaccine hesitant individuals came naturally.Those participants reported using adult learning theory and motivational interviewing to address patient queries and concerns:

"Using adult learning theory, motivational interviewing, I can quickly learn how I need to pitch the information, and I can find out what they need to know. What's their current level of information about COVID or vaccines? Do they have any issues with needles or the vaccines? Then I provide people with whatever they need at whatever level, depending on their literacy and education and their motivation." (P4, Nurse)

For others, however, addressing vaccine hesitant patients' concerns was a challenge, with some participants reporting *"not quite knowing how to deal with vaccine hesitancy*". This was especially amplified in a vaccination hub setting, with some participants reporting not having adequate training in eliciting and addressing patients' concerns about vaccination, especially hesitant patients. Some nurses working in these settings described working with colleagues who were inadequately trained; these nurses were able to *"ask the questions, check the pre-vaccination checklist*" but were unable to explain *"why the vaccine is a good idea and how it will work*". Participants recommended developing scripts to assist staff with these conversations and extended learning modules for nurse immunisers:

"We need to have scripts for staff about, well, the COVID vaccination is a good idea because of this. Yes, you will get those side effects and that's because of these. It doesn't have to be long, but I think then if all clinicians are saying the same thing in a scripted version, then maybe that will enhance patients' confidence because we're all saying the same thing." (P9, Nurse)

### *Language barriers when communicating with patients from culturally and linguistically diverse (CALD) backgrounds*

Participants reported language as being a key barrier in communicating with some patients from CALD backgrounds. This communication barrier resulted in the need for translators/interpreters. However, there were often difficulties accessing interpreters. Participants reported *"waiting for ages*" and in the process, this *"slowed down their ability to be able to vaccinate*". Participants also reported sometimes printing the information in the patient's language to help accommodate the patient. However, simply printing the resource in the patient's language may not be sufficient, especially when getting informed consent, which requires a thorough understanding of the treatment, risks and benefits and alternative options available to patient. One participant described:

"Sometimes I feel like I've had trouble getting informed consent around it because it's quite obvious when you start talking to them that they didn't fill out the form online…like someone else has filled it out for them who actually reads English." (P7, Nurse)

Despite these issues, participants reported that patients from CALD backgrounds were generally supportive of COVID-19 vaccination:

"I think what definitely surprised me and made me really glad to be part of those clinics was the ones from the non-English speaking background were so grateful and excited to be able to get their vaccines. There was no vaccine hesitancy at all. There would have been less than 1% compared to the general population and the English-speaking population. It was definitely a very different feeling and much more enthusiasm from the non-English speaking groups that went through the clinics." (P13, Pharmacist)

## Factors considered helpful in communicating with patients about COVID-19 vaccines

Participants indicated that the following four factors were helpful when communicating with their patients:

### *Having access to online immunisation resources*

Participants reported using a variety of resources from governmental and non-governmental sources. These ranged from factsheets and brochures to frequently asked questions about COVID-19 vaccines. Participants described these resources as especially useful when patients had queries about vaccine side effects and other concerns. Participants also reported listening to a daily podcast on issues relating to the COVID-19 pandemic, produced by an experienced health journalist for a public broadcaster. Participants described this podcast as "*a podcast that was discussing daily what was happening*", which was particularly helpful at a time when the information about COVID-19 and vaccines was rapidly changing.

Pharmacists also reported using specific platforms that help provide services to support community pharmacies. Participants described these platforms as being helpful, especially when the information about COVID-19 was constantly changing.

### *Using a combination of strategies to guide conversations*

Participants reported using a range of strategies in their vaccination conversations with their patients. Participants reiterated the importance of facilitating a comfortable environment for patients and reported trying to make patients feel *"warm and welcomed*". This was especially important when caring for patients who were anxious, with some nurses reporting using humour and reassurance.

During conversations, participants reported gauging where patients were on the continuum of vaccine acceptance and *"titrating*" their information according to the kind of questions patients asked. Participants also described reinforcing patient autonomy by giving them the information but leaving the vaccination choice to the patient::

"I can give you this information, but it's up to you to decide. I can't force you." (P12, Pharmacist)

While acknowledging patient's autonomy, many participants reported recommending vaccination to the patients once all the information was presented to them. Acknowledging that many patients saw their provider as a trusted source of medical information for patients, participants throught it important to clearly recommend vaccination to patients.

***Knowing about and implementing tailored strategies to support Aboriginal and Torres Strait Islander (hereafter respectfully referred to as Aboriginal) and CALD patients***

Participants reported using a range of tailored strategies when communicating with diverse populations, including Aboriginal people and people of CALD backgrounds. At the centre of these strategies was the notion of building trust with and giving respect to people, which was reported as helpful in making participants more comfortable and receptive to the information presented.

> "It's all about respect, about what they hear and see from people, from others, so that's quite powerful." (P8, Nurse)

Participants reported building trust with Aboriginal patients by working with Aboriginal Elders who are respected by community members. When trust is built and maintained with Aboriginal Elders, Aboriginal Elders then share information with their communities, and *"link the information out*", and vouch for the service. Another way of building trust with Aboriginal patients was by working directly with Aboriginal Liaison Officers who provide suggestions on how best to communicate with and support Aboriginal patients.

To better accommodate patients from CALD backgrounds, participants reported using translator and interpreter services to assist with conversations and translated resources where necessary. However, given the limited translations available, participants suggested it would be helpful to have resources in other languages:

> "In terms of more support -- you know how some patients they want to have the information right here, right now? Sometimes I don't speak their language like someone from Afghanistan. I know I must go to the interpreting service, and you must book, but it's nice if it's like, on the go." (P3, Nurse)

***Having the motivation and time to continually learn about COVID-19 vaccines***

Participants reported keeping informed about COVID-19 vaccines and using evidence-based information. This was difficult at times given the constantly changing nature of information about COVID-19. Participants reported having to take time outside of their work hours to stay up to date with all COVID-19 related information. In the instances where they did not have the answers, they would conduct further research to inform themselves and then present that information to the patient:

> "I've always made sure that it's evidence-based, or from credible sources. That's important……I'm also really open with them, if I don't know, I will tell you. I won't make something up, and I'll go and find out, so that's fine." (P4, Nurse)

Participants saw it as their professional responsibility as they "*represented healthcare*" to become informed about COVID-19 vaccination and provide credible information to patients:

> "They look to me as someone who can be reliable and inform them correctly and that's part of my professional responsibility. I consider it my professional responsibility to do my reading about the vaccination program and where they come from." (P16, Nurse)

**Discussion**

Our study provides insights into the factors that made it either difficult or easier for immunisation providers in NSW to communicate with patients about COVID-19 vaccines in the first quarter of 2022, almost 12 months into the COVID-19 vaccine rollout. For immunisation providers, being skilled at interpersonal interactions and having a range of strategies at hand to build rapport and instil confidence in patients was an important enabler of supportive communication with patients. Conversely, time constraints, language barriers and difficulties eliciting questions and concerns were all factors that hindered communication with patients. Research has found that positive interactions with health providers are a critical factor in shaping vaccination attitudes [17], and it is important that providers feel confident and well-equipped to communicate with their patients.

In this study, despite many participants reporting confidence in communicating with patients and recommending vaccination, some indicated a lack of skills and confidence in eliciting and answering patients' vaccination queries and concerns. Years of professional experience (some participants in this study had less than one year experience immunising patients) and the rapidly changing nature of the information about COVID-19 vaccines may have been contributing factors. Similarly to our study, in a qualitative study conducted by Dube and colleagues (2022), healthcare providers who were otherwise confident about their skills with vaccination conversations indicated that the constantly evolving nature of COVID-19 information impacted their ability to confidently provide vaccination information to parents [29]. Given that immunisation providers are highly trusted sources of information [17,30], they should be provided with opportunities to develop or enhance their communication skills, particularly in terms of addressing patients' vaccination questions and concerns. Support in the form of conversation guides and patient friendly resources might prove useful for providers. This type of support is included in the communication training package Sharing Knowledge About Immunisation [17], which may be especially helpful for providers new to immunisation, or those immunising new patient populations, such as pharmacists vaccinating young children. Training in motivational interviewing may also be useful in improving patient-provider communication about vaccination [31]. Motivational interviewing, informed by active listening and a patient-centred, non-judgmental approach, can help immunisation providers to encourage behaviour change in a vaccine-hesitant individual [32,33].

Both the survey and interviews identified that time constraints during vaccine consultations made it difficult for providers to communicate effectively with patients. Our findings was corroborated by an earlier study with providers in Switzerland, in which providers, pressed for consultation time, reported shortening or otherwise compromising conversations with patients despite their unanswered questions and concerns about vaccination [34]. In our study, this was further amplified in community pharmacies, as pharmacists had a limited amount of time to vaccinate patients and answer their queries and concerns. This alludes to Australia's fee-for-service model, where healthcare providers' (mainly GPs) consultation time is limited and billed [35]. Medicare, Australia's national health insurance scheme, provides the majority of general practice funding on a fee-for-service basis. GPs can claim Medicare payment for patient care provided face-to-face with patients or for the management of chronic diseases (eg, team care arrangements) [35]. In a cross-sectional survey assessing the time that GPs spent on non-billable care in Australia, it was found that almost 70 % of GPs reported providing non-billable patient care, however, if that care was included in their role description, they could potentially earn between AUD $10,000 and $23,000 [35]. In our study, pharmacists reported receiving critical information late and not being adequately reimbursed. The Australian Government could support immunisation providers, especially pharmacists, by allocating appropriate funding to allow for COVID-19 vaccination discussions and slightly longer consultations. Longer consultations offer opportunities to have detailed vaccination discussions, which may be

important to all, but particularly to parents of children aged 5–11 who may have additional vaccination queries. GPs have existing funding in place to have longer consultations, [36] and this could be extended to pharmacists, which may help support them to have these longer consultations.

In the qualitative phase of the study, we identified that language was a key barrier in communicating with some patients from CALD backgrounds. This finding is consistent with the literature on CALD populations in Australia experiencing language barriers and lower health literacy, which contribute to health inequity [37,38]. These barriers were further amplified during the COVID-19 pandemic, when there was a shortage of interpreters, as well as quality issues and delays in the availability of resources for communities [39]. Participants in this study reported that whilst resources were available, there were limited translations. However, having translated resources for CALD communities, including newly arrived refugees and migrants, may not be sufficient to overcome this language barrier [40]. To ensure that the information presented is comprehensible and understandable to the refugee and migrant communities, it is important to co-develop resources with communities [38]. Using plain language in these resources is important, as is the use of translated signage, pictorials, and graphics to clearly illustrate the text content and help patients feel more receptive to the information presented. Resources and health initiatives should also be tailored to specific populations [40]. Health information that is tailored to the needs and cultural beliefs of the people is better received than generic health messages [41].

### *Strengths and limitations*

A key strength of our study is the recruitment of a relatively large sample of immunisation providers for the survey, and capturing of providers' views at a time when they were at the frontline of the pandemic. Limitations include the generalisability of the findings; we conducted a cross-sectional survey which represents a short period of time and includes the views of GPs and nurses but not a lot of pharmacists. We were unable to compare responses between different providers due to low recruitment of pharmacists. However,whilst the data obtained from the survey was only descriptive in nature, because of the explanatory-sequential mixed methods design, the qualitative data provides depth to these findings. Views presented by the qualitative data may not represent immunisation providers outside of NSW and those from CALD backgrounds.

## Conclusion

This study identified factors that either hindered and/or facilitated providers' conversations with patients about COVID-19 vaccines. Factors that made conversations difficult included eliciting patient queries and concerns, keeping up-to-date with changing information and language barriers when communicating with patients from CALD backgrounds. Factors that were considered helpful in conversations included using a combination of strategies and dedicating time to keep up-to-date with COVID-19 vaccination information. Pharmacists reported receiving critical information late, which suggests that pharmacists were not adequately integrated into the public health information chain during the COVID-19 pandemic. Immunisation providers have been at the forefront of the pandemic and they are trusted sources of information for patients. It is of utmost importance that providers feel supported and are well-equipped to communicate about COVID-19 vaccines with their patients, especially those who are hesitant. We recommend providing training to providers to further develop their vaccination communication skills. The findings of this research can inform the development of further tools and resources aimed at improving patient-provider communication about COVID-19 vaccines and other routine and seasonal vaccines. It can also help inform future public health communication responses aimed at improving patient-provider conversations.

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## Data availability

The interview guide and survey questions are available as supplementary material.

## Declaration of Competing Interest

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: IA, BB, KB and MS received funding from the NSW Health COVID-19 Research Grants Program. MM has no competing interests to declare. The authors declare no other competing interests.

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## Appendix A. Supplementary material

Supplementary data to this article can be found online at https://doi.org/10.1016/j.jvacx.2023.100304.

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