

Attitudes, perceptions, and experiences of Western Australians towards vaccine safety surveillance systems following COVID-19 vaccines: A qualitative descriptive study

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Abstract

Objective: Concerns regarding adverse events following immunisation are a barrier to vaccine uptake. Health professionals use vaccine safety surveillance systems (VSSs) to monitor vaccines and inform the public of safety data. With little known about public attitudes, perceptions, and experiences with VSS, we examined them in the context of COVID-19 vaccinations in Western Australia.

Methods: Researchers conducted 158 qualitative interviews between March 2021 and May 2022 within the broader [name redacted] project. Data regarding VSS were coded in NVivo using the deductive and inductive methods.

Results: Despite some not knowing about VSS, participants expected follow-up post COVID-19 vaccination. Vaccine hesitant or refusing participants knew about VSS and regarded these systems positively. Additional considerations concerned the reliability of data collected by VSS.

Conclusion: Perceptions of VSS signal a lack of understanding about how these systems work. Future studies should further explore the public's understanding of VSS, whether VSS improves vaccine confidence, and how governments can better communicate to the public about VSS.

Implications for public health: Lack of understanding of how VSS operate may be stymying attempts to build public vaccine confidence. Healthcare providers and governments could build public knowledge and understanding of VSS to mitigate concerns of adverse events following immunisation.

Key words: vaccine, surveillance, safety systems, vaccine hesitancy, attitude, perception, experiences

Introduction

In March 2020, the World Health Organization declared a global pandemic due to the rapid spread of SARS-CoV-2 (henceforth, COVID-19).¹ Quarantines and restrictions on gatherings were subsequently implemented to mitigate disease transmission.² Novel vaccinations were rapidly developed and made available worldwide. In Australia, the Comirnaty[®] vaccine was made available first followed by Vaxzevria[®], Spikevax[®], and Nuvaxovid[®].³

Vaccines are an integral defence against COVID-19, protecting against severe illness, decreasing transmission rates, and reducing the

severity of public health restrictions.⁴ Despite the benefits, there remains a small risk of adverse events following immunisation (AEFI).⁵ Concerns about AEFIs are a major barrier to public confidence in vaccines, previously demonstrated following the 2010 Australian influenza vaccination campaign, in which increased febrile convulsions were observed in children under 5 years. This subsequently impacted routine vaccination rates and prompted governments to recommend the development of more comprehensive vaccine safety surveillance systems (VSSs).⁶ More recently, with heightened awareness around the rapidity of COVID-19 vaccine development, reports of blood clots associated with the

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Vaxzevria[®] vaccine⁷ renewed public concerns of AEFIs and altered people's COVID-19 vaccine intentions.⁸ The Pfizer (Cominarty) vaccine also generated some concerns following instances of myocarditis in younger recipients later in the rollout.⁹

VSSs capture and analyse reports of AEFIs and are broadly classified as active or passive. Passive VSS adverse events following immunisation involve vaccine recipients or healthcare professionals reporting AEFIs to regulatory bodies.¹⁰ While important in detecting serious AEFIs, they rely on the individual seeking assistance and/or recognising a potential relationship between vaccination and AEFI. The nature of passive reporting means that timely detection of AEFI and identification of safety signals on a broad scale is limited.¹¹ Accordingly, active VSSs, such as AusVaxSafety (AVS), have been implemented to complement existing passive systems and address some of their limitations.¹² The AVS system utilises a number of surveillance tools to actively survey individuals post-vaccination (via text message or email) to determine AEFI rates for specific vaccines. Large datasets are analysed in near-real time to detect vaccine safety signals.¹²

Despite being introduced to monitor vaccine safety and improve confidence in vaccinations, evidence regarding relevant stakeholders' attitudes, perceptions, and experiences of vaccine recipients towards VSS is limited. Interviews conducted in 2020 with individuals with expertise in vaccine safety in Australia identified that actors within the surveillance systems regard them as "incredibly powerful tool[s]" for public confidence.¹⁰ A 2021 randomised controlled trial in South Australia found the majority of participating vaccine recipients supported SMS-based safety surveillance following influenza immunisation.¹³ Although safety surveillance is central to the success of COVID-19 vaccination campaigns from a public health and safety level, there is no known evidence of how VSS may impact public confidence in COVID-19 vaccinations.

Perceptions around VSS may influence vaccine intentions. Understanding these perceptions may inform methods to maintain or improve vaccine uptake. The [name redacted] project aimed to

elucidate the conditions required for a successful COVID-19 vaccine rollout in Western Australia (WA).¹⁴ In this component, we sought to examine public attitudes, perceptions, and experiences around vaccine safety surveillance in WA, amongst both vaccine acceptors and vaccine hesitant or refusing (VHR) individuals.

Methods

This was a qualitative descriptive study using semi-structured interviews conducted by the [name redacted] research team between March 2021 and May 2022. The [name redacted] study aimed to recruit up to 300 participants in WA, examining attitudes towards COVID-19 vaccinations in both the general population and VHR individuals. Detailed methods have previously been published in the study's open access protocol.¹⁴ Recruitment commenced in February 2021 using traditional and social (Facebook and Instagram) media with a link to an online REDCap survey, word-of-mouth, and snowballing. We directed television, radio, and word of mouth audiences to a [redacted] webpage about the study which contained a link to our REDCap survey. Potential participants signed up via the online REDCap survey, which collected demographic data and contact details. After consenting, potential participants were asked to provide their postcode: only those who indicated that they had a WA postcode were permitted to continue with the survey (Figure 1). They were then contacted up to three times each by telephone and/or email to organise an interview if they fit into one of our pre-defined categories, including health care workers, education workers, aged care workers, young adults, adults aged 65+ years, parents of children aged <18 years, culturally and linguistically diverse adults, people living in regional or remote WA, and/or pregnant. People were excluded if they did not fit into one of these categories, or if the category was 'full' (i.e., approximately 20 interviews had already occurred with each group). The semi-structured interviews were directed by an interview guide¹⁴ developed by the [name redacted] research team. Interviews were conducted via phone, video call, or in person, and participants were reimbursed with a \$20 supermarket gift card. Given that the interviews were carried out during different

Figure 1: Flow diagram detailing participant recruitment.

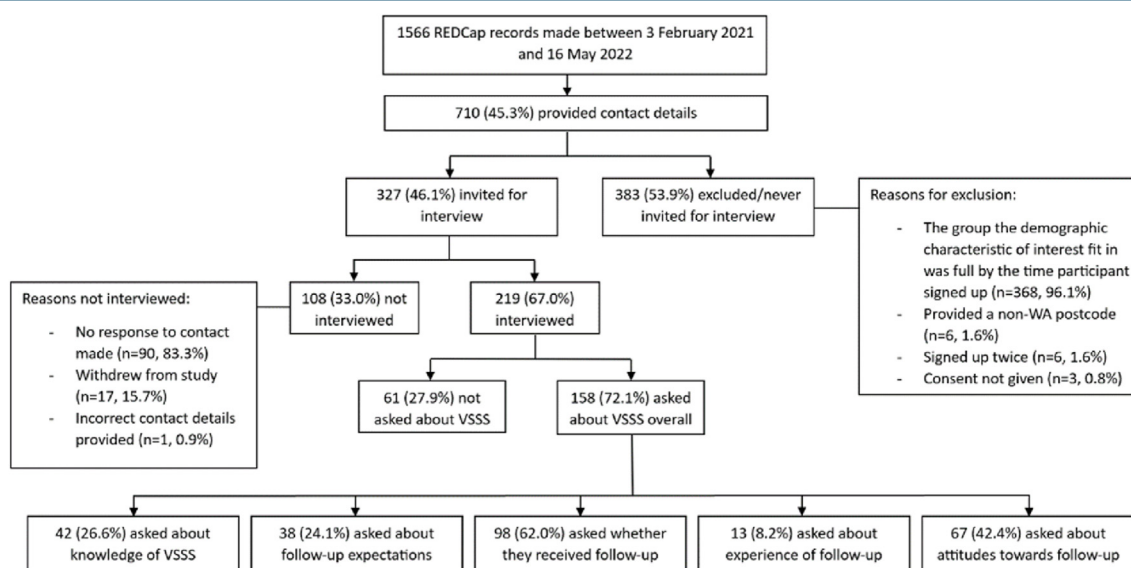


Table 1: Interview questions analysed.

Interview questions relating to follow-up.	
1. How do you feel about receiving the COVID-19 vaccine?	a. Any positive/negative feelings?
2. What monitoring and follow-up would you expect for a COVID-19 vaccine?	a. What sort of follow-up do you expect, if any?
3. What sort of information would you like from the person vaccinating you?	
4. Would you prefer short or long-term follow-up? ^a	
Interview Questions Relating to Vaccine Intentions	
1. Have you ever turned down a vaccine? Can you tell me about this?	a. What vaccine? and Why?

^aNot all participants were asked this question.

stages of the COVID-19 vaccine rollout, questions were adapted over time to reflect experiences rather than expectations. As a result, not all questions were asked in every interview and some participants were asked additional questions. Interviews lasted approximately one hour, and the discussions reported here took between five and ten minutes of talking time (see Table 1). Each interview was transcribed using the Otter.ai software, and subsequently refined by a professional transcriber. The Child and Adolescent Health Services Human Research Ethics Committee (RGS000004457) provided study approval. Participants were informed of the risks and benefits,

Table 2: Demographic table of participants included in this study.

Gender	n	%
Male	49	31
Female	104	66
Non-binary	3	2
Prefer not to say	2	1
Age (years)		
18–29	22	14
30–39	40	25
40–49	38	24
50–64	39	25
65+	19	12
Highest level of education		
Postgraduate university degree	58	37
Undergraduate university degree	57	36
TAFE/Apprenticeship or equivalent	23	15
Year 12 or equivalent	15	9
Year 10 or equivalent	5	3
Industry of employment		
Education and training	30	19
Healthcare and social assistance	57	36
Mining	12	8
Professional, scientific, and technical services	13	8
Other Industries	46	29
Index of relative socio-economic disadvantage ^a		
1–2	9	5
3–4	25	16
5–6	22	14
7–8	33	21
9–10	69	44

^aIndex of relative socio-economic disadvantage—socioeconomic index to summarise economic and social conditions of people and households within an area.¹⁶ Low scores indicate a relatively greater disadvantage while a high score indicates a relative lack of disadvantage.

provided written consent, and were assigned pseudonyms for anonymity.

This article reports findings of specific interview questions pertaining to follow-up after vaccination. We defined follow-up as the individual being contacted post-vaccination via text message (SMS), email, or telephone call. Questions about follow-up focused primarily on active rather than passive vaccine safety surveillance, as active surveillance is publicly visible, whereas passive surveillance requires initiation by the individual.¹² Additionally, we incorporated participants' answers to questions relating to their COVID-19 vaccine intentions, using the COVID-19 vaccine intentions model described by Carlson et al.⁸ to clearly identify vaccine hesitant individuals. This model categorises participants into four groups: (1) acceptor, (2) cautious acceptor, (3) wait awhile, and (4) refuser. For the present analysis, we compressed and simplified these categories. Anybody who reported vaccinating or intending to vaccinate was an acceptor (groups 1 and 2). We classed people in groups 3 and 4 as VHR based on their stated intentions to either delay or refuse COVID-19 vaccinations, their behaviour in having already done so, or their refusal of other vaccines previously.

All relevant interview questions are listed in Table 1.

We used inductive and deductive approaches to identify and define themes within our data. For analysis of attitudes, perceptions, and experiences around vaccine safety surveillance, we deductively generated a defined coding tree. This was based on the questions in the interview protocol that were pertinent to this study. The defined coding tree contained five themes: (1) **knowledge** of VSSS,¹ (2) **expectations** of follow-up, (3) **receipt** of follow-up, (4) **experience** of follow-up, and (5) **attitudes** towards follow-up. Then, the first four authors coded 40 transcript by hand, and in this process, a further set of emergent themes was inductively identified and reviewed by SMS and KA. The entire set of transcripts was imported into NVivo 20 software [Version 1.3; QSR International Pty Ltd.]. Authors 1–4 then coded the entire dataset in pairs, swapping analyses for crosschecking by the other pair to ensure standardisation. Following this process, we employed a modified summative content analysis (a sub-category of content analysis) approach, to report the number of people who provided responses in relation to our five defined themes (Figure 1, Table 3).¹⁵ This was necessary for transparency, as our dataset was non-homogenous due to changes in the vaccine rollout over time which impacted the interview questions asked. Including the exact numbers of people who provided data for enabled us to generate specific qualitative cohorts whose perspectives we could report for each defined theme. For our inductive themes, we did not use this modified summative content analysis, and we note in our results that the responses came from only a few participants within our entire cohort.

3. Results

Interview transcripts with 158 separate individuals were analysed. Most participants (74%) were aged between 30 and 64 years, and a large proportion (66%) was female. Many (73%) were tertiary educated and over one-third (36%) worked in healthcare. Almost half (44%) lived in a high socio-economic area, as indicated by their high

¹Knowledge of follow-up post vaccination was equated to knowledge of VSSS.

Table 3: Modified summative content analysis of the five defined themes in this study.

Themes	Acceptor general population ^a		Vaccine hesitant or refusing	
	n	%	n	%
Knowledge of existence of VSSS (N^a=42)				
Knew about VSSS	12	29	6	14
Did not know about VSSS	11	26	13	31
Expectations about being followed up (N^a=38)				
Expected follow-up after vaccination	21	55	2	5
Did not expect follow-up after vaccination	15	40	0	0
Received follow-up after vaccination (N^a=98)				
Received follow-up	77	79	0	0
Did not receive follow-up	19	19	2	2
Attitudes of being followed up after vaccination (N^a=67)				
Positive attitudes towards being followed up	37	55	6	9
Negative attitudes towards being followed up	3	5	1	1
Indifferent attitudes towards being followed up	20	30	0	0

^aThe total number of participants that were coded into this theme. VSSS: vaccine safety surveillance systems.

index of relative socio-economic disadvantage.¹⁴ Demographics are summarised in Table 2.

Defined themes regarding vaccine safety surveillance

Forty-two of the 158 (27%) participants were asked directly about their **knowledge of VSSS**. Eighteen (43%) of them, including six VH individuals, knew of the existence of VSSS. Most had prior knowledge of these systems before receiving their COVID-19 vaccines. Adina² (female, 28 years, acceptor) mentioned “*I think I read somewhere that they were going to follow-up on you after you get [the vaccine]*”. A small minority said that they were informed on the day of their COVID-19 vaccination to expect a text message.

Thirty-eight of the 158 (24%) participants were asked whether they were **expecting follow-up** after their COVID-19 vaccination. Twenty-three (15%) of them expected some form of follow-up, with over half stating that they “*would definitely expect there to be follow-up*”.

Ninety-eight of the 158 (62%) participants were asked whether they did **receive follow-up** after their COVID-19 vaccination. The remaining 60 (38%) were not vaccinated at the time of their interview. Of those that had been vaccinated, a large proportion reported follow up through text message, email, a telephone call, or direct contact via a visit to their doctor. Most described receiving a text message or email. “*I got a text message...asking if I'd had any reaction.*” A minority received a phone call or were followed up during a subsequent visit to their doctor.

A small group of vaccinated participants said that they did not receive any follow-up, but some mentioned being informed about who to contact to report adverse reactions. Trish (female, 68 years, acceptor) stated “*We were given heaps of information on what to do and we were given an out of hours number, we were given the hospital contact, you know, if this happens, do that, if the other thing happens, do that.*”

Thirteen of the 98 (13%) participants that reported follow-up were asked about their **experiences of follow-up**. Almost all reported positive experiences, encountering no issues, and declaring the surveys had “*very simple questions which [they] could answer very*

easily”. One participant “*was a bit worried*” after receiving follow-up due to information on blood clots being shown on the news.

Sixty-seven of the 158 (42%) participants, including seven VHR individuals, were asked how they felt about being followed up after vaccination. Of these participants who shared **attitudes to follow-up**, 43 felt positively, four expressed a negative attitude, and the rest were neutral.

Participants with positive attitudes reported feeling comfortable with being followed up. Two VHR participants stated, “*it's a good process*” and “*[it's] good that they're doing that*”. Others said that being monitored was reassuring, commenting that “*it gave [them] a bit more confidence that they're getting more data about any side effects*”. One participant expressed an altruistic view, seeing the process of being monitored and responding to follow-up surveys as an opportunity to contribute to the community.

Of those that expressed negative attitudes toward follow-up, several were unconvinced of its necessity, with some stating that “*[they] didn't have a positive or negative feeling either way*”, and that “*nothing really happened, so it wasn't necessary*”. Conversely, others believed that collecting data on adverse events was useful because “*... [they] can make adjustments in future vaccines that might need to be made for this thing*”. Some participants did not feel like it was someone else's responsibility to monitor them and were “*happy to self-examine*”. A VHR participant expressed a lack of confidence in the process, declaring “*those surveys are inherently flawed*” and “*it's pointless information*”. Another participant indicated that follow-up is counterproductive for promoting vaccine uptake because it “*kind of gives the impression that you're expecting to have side effects*”.

Table 3 presents an overview of responses provided by participants for each of the five defined themes.

Additional systemic considerations

A small number of participants shared opinions on when they should receive follow-up post-vaccination. Around a third of them preferred short-term follow-up, with Nancy (female, 27 years, acceptor) specifying that “*I think short term follow-up is fine ... if everyone's going through the same experience you'll know sooner or later whether there are long term effects*”. Another third preferred long-term follow-up, with one commenting that “*this vaccine hasn't been tested out in the*

²Quotes have been reported alongside participants' pseudonyms.

wild for long enough". The remaining third preferred a combination of both short and long-term follow-up.

A small number of participants offered opinions on who they believe should conduct follow-up after vaccinations, with almost all believing healthcare professionals should be responsible. Lawrence (male, 25 years, acceptor) stated that "... *it would be a good thing to have people like your GP or your pharmacist, the person that administered the vaccination, to send a check-up text or something...*". The outlier, Raheem (male, 31 years, acceptor), was a pharmacist who approached this question from the perspective of an immunisation provider. Raheem (male, 31 years, acceptor) believed that patients should follow-up with their healthcare professional if they experience an AEFI, commenting "*I would like the patient to contact us a couple of days after they had the vaccine*".

Twenty-six participants, a third of whom were VHR, expressed views on specific aspects of current VSSS in Australia. These opinions mainly concerned (1) the reliability of the AEFI data collected by such systems, (2) whether certain population groups can effectively engage with these systems, and (3) the methods of data collection.

Some of these participants expressed concerns regarding the reliability of the data collected, and by extension whether the systems fulfil their purpose. One VHR participant felt the data was untrustworthy because "*it's not a full and complete assessment of everybody who has had this vaccination*". Another commented that the data could be distorted due to patients "*over-reporting normal side effects*".

A few participants mentioned that some patients may struggle to respond to current follow-up surveys delivered via SMS or email. One specified that the elderly population may prefer "*phone contact to a landline*" rather than a text, stating that it isn't "*easy to follow the prompts*". Another invoked the challenges in making reports to passive systems, commenting that, "*A lot of people don't realise how to make reports about side effects*" and alluded to an easier method of reporting such as "*an app or something on your phone*". A further participant expressed that the average person may struggle with these systems due to a lack of medical knowledge. "*I'm just an average Joe Bloggs ... maybe I haven't got a lot of medical background in my family, how am I supposed to report what I don't understand?*" A few participants commented on the limited number of options when reporting adverse reactions via follow-up surveys. One specified that they "*needed something like a blank bit to actually fill in*".

Discussion

We explored attitudes, perceptions, and experiences regarding VSSSS in the Western Australian population during the COVID-19 pandemic. Most participants who received a COVID-19 vaccination also reported receiving follow-up, and our participants expected follow-up after vaccination, including those who reported not knowing that VSSS exists.

Many participants reported a positive, user-friendly experience of follow-up. This echoes a 2021 feasibility study of a vaccine safety surveillance tool, SmartVax, in Switzerland, where 188 of 200 participants deemed the tool "excellent" or "very useful."¹⁶

High awareness of VSSS amongst VHR participants may arise because non-vaccinating individuals investigate systems around vaccination in their decision-making.¹⁷ Most VHR participants had positive attitudes

despite their reluctance to be vaccinated, or perhaps because of this reluctance, since follow-up addresses prevalent concerns about adverse events.¹⁸

Participants' beliefs that healthcare professionals should be responsible for follow-up may be attributed to the fact that their primary interaction is with a healthcare professional when being vaccinated. Additionally, recipients of messages from the surveillance tool SmartVax, which was used by AVS in WA for text message and email follow-up, could interpret the message as personally coming from the immunising health professional, as the name of the vaccine clinic is provided within the SMS message.¹⁹ Alongside text or email messages, some vaccination providers follow-up with a telephone call, which may reinforce the idea that they are responsible.²⁰

The expectation that healthcare professionals should be solely responsible for follow-up also suggests a lack of understanding of the public health importance of VSSS by the public, possibly arising from a lack of government communication efforts regarding these systems during the pandemic. While healthcare professionals may not have a direct role in how VSSS operate, they may have still an important role in facilitating patient awareness and understanding of these systems. Specifically, they could educate vaccine recipients post-vaccination on the different types of VSSS as well as how these systems should be used. This would provide vaccine recipients with the means to both report and seek appropriate follow-up if they experience an AEFI.

Many of the opinions on VSSS concerned reliability of the data collected. Some participants commented that all vaccine recipients should receive follow-up. Individualised and universal surveillance would likely feel comforting: it would feel like government systems were paying attention to every dose given and could swiftly act in the event of a safety signal. However, while we understand participants' sentiments of wanting to be monitored, their views likely arise from a limited understanding of how the systems work. Surveying all vaccine recipients would not be best practice because (1) it is a poor use of resources and funding, (2) it is difficult to achieve a 'perfect' system capable of reaching every vaccine recipient, and (3) it is unnecessary to contact all vaccine recipients as inferential statistics can generate a representative depiction of the adverse events associated with a vaccine.²¹ Currently, AVS utilises various surveillance tools to survey a representative sample of the population across the country.¹² These data are collated and used to make interpretations about vaccine safety signals.

The participants in our study may believe that follow-up via text or email is the only facet of VSSS, and hence that if the entire population does not receive such follow up, then the system is not paying attention. Such a belief would, again, arise from limited knowledge of the different functions of active and passive surveillance systems: active systems continuously monitor serious and non-serious (or expected) AEFI to determine vaccine safety signals, whereas passive systems capture people who seek medical care for (or self-report) an AEFI. In this context, passive surveillance may identify more serious AEFI, as the AEFI itself would trigger the individual seeking medical care. Therefore, the belief that all vaccine recipients should be followed up after vaccination, because otherwise severe adverse events may go undetected, may represent an opportunity to educate the public about the benefits and relationships between different types of VSSS. This education could reassure people that the systems do collect data effectively on adverse events, even when people do not receive individualised messages. Our broader data indicate that

since the public knows about, expects, but is under-informed about VSSS, there is the opportunity educates people about surveillance in ways that will promote vaccine confidence rather than cue vaccine hesitancy.

Participants may also believe the data collected by VSSS are unreliable due to a lack of trust in government, augmented by further concerns from the vaccine rollout.^{22,23} Vaccines were rapidly developed and granted provisional registration.³ Mandates that required Western Australians to be vaccinated²⁴ may have contributed to the public distrust of the government and consequently, doubt towards the reliability of data collected by VSSS. The broader systemic and political trust issues arising from the COVID-19 rollout cannot easily be restored, but for the purposes of VSSS they can, in part, be mitigated by its pre-existing and successful use in Australia for other vaccines. We have argued that governments can educate people about VSSS “safely” by explaining how active and passive systems work and interact. To demonstrate broader trustworthiness, we recommend that such education draws from experiences outside the COVID-19 vaccination program, as well as reporting the strengths and limitations within it.

Limitations

Interview questions were modified to accommodate the different stages of the COVID-19 vaccine rollout in WA. Not all questions were asked at all times, affecting the depth and breadth of the data we collected. In particular, we only had a small number of participants who told us how much time should pass following vaccination before follow-up, and which actors should be responsible for following up. Nevertheless, this qualitative data is valuable because it is novel and can guide future research. Some researchers asked questions in different ways, which may have led to some participants either misunderstanding or not addressing the question. However, this allowed us to examine themes that were not initially expected. Furthermore, participants’ perspectives may not have been static and likely changed during the pandemic and the progression of the vaccine rollout. However, in conducting the interviews as we did, we obtained an accurate portrayal of participants’ experiences as the COVID-19 pandemic and vaccine rollout progressed.

Participants were not given a standardised explanation of VSSS prior to being interviewed. Consequently, we have assumed that knowledge of follow-up after vaccination equates to knowledge of active VSSS. However, post-vaccination follow-up for AEFIs is only one aspect of VSSS. It is unknown whether participants were aware that VSSS involve both collecting and interpreting vaccine safety data, which is subsequently used to create publicly available online reports. Despite this, the lack of a standardised explanation may have been beneficial as it would have been difficult to define VSSS without unintentionally introducing bias regarding knowledge of or support for these systems.

Interview participants were Western Australians, who had different experiences with COVID-19 vaccinations and the pandemic compared to the rest of the country and world. For example, extended hard borders (both globally and with other Australian states), coupled with high vaccination rates, resulted in WA being one of the only jurisdictions to achieve high third dose COVID-19 vaccination rates prior to extensive community transmission.²⁵ Further, our results may

not be applicable to the wider WA population as: (1) our sample size was relatively small and the analysis was qualitative and (2) our study population, which reflected the [project name] sampling strategy to include sub-groups of teachers and health care workers, was skewed towards females, those with higher education, and residents of higher SES areas. Despite these limitations, our study still provides a strong foundation for subsequent studies to build upon.

Future research and recommendations

While our research has provided some insight into the perceptions of the Western Australian population towards VSSS, the effects that these systems may have in increasing confidence in vaccination programs requires further elucidation. The extent of the public’s knowledge regarding the different forms of VSSS and how they function should also be investigated. Future attitudinal and experiential studies could employ representative samples, and sample from other major groups of interest (e.g. Aboriginal and Torres Strait Islander peoples, the elderly, or younger people). Message testing could be employed to determine how governments and health authorities can better communicate to the public about how safety systems operate, and further attention could be paid to opportunities and methods for doing so—for example, in conversations, videos, or written text provided during the waiting period after vaccination.

Conclusion

Our study aimed to examine attitudes, perceptions, and experiences of the Australian population towards VSSSs. Many participants expected follow-up, despite not knowing about systems for vaccine safety surveillance, and experienced follow-up after being vaccinated. VHR participants supported follow-up despite (or perhaps because of) their objections to vaccines. Opinions on current VSSS concerned the reliability of the data collected which can be attributed to (1) a lack of understanding of systems for VSS and (2) distrust in government. Healthcare providers could use their knowledge of VSSS to mitigate public concerns of AEFIs and facilitate patient understanding of these systems, and government should be exploring ways to increase this knowledge through public communications. Future studies should further explore public knowledge regarding VSSS in more detail, including whether and how these systems increase confidence in vaccinations, and how officials and health professionals should communicate about them to the public.

Ethics Approval

Ethics approval was granted by the Child and Adolescent Health Services Human Research Ethics Committee (RGS0000004457).

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Conflicts of interest

Katie Attwell is a specialist advisor to the Australian Technical Advisory Group on Immunisation. The "Coronavax" project is funded by the Government of Western Australia, with all funds paid to institutions. Funders are not involved in the conceptualisation, design, data collection, analysis, decision to publish, or preparation of manuscripts. Associate Professor Attwell is a recipient of a Discovery Early Career Researcher Award funded by the Australian Research Council of the Australian Government (DE19000158). Other authors have no conflict to share.

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