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Original Article/Research

Western Australian health care workers' views on mandatory COVID-19 vaccination for the workplace

Katie Attwell [a,b,*], Leah Roberts [a], Christopher C Blyth [b], Samantha J Carlson [b]

[a] School of Social Sciences, University of Western Australia, 35 Stirling Highway, Crawley WA 6009, Australia
[b] Wesfarmers Centre of Vaccines and Infectious Diseases, Telethon Kids Institute, Perth Children's Hospital, Nedlands, WA 6009, Australia

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ABSTRACT

Background: Health care workers (HCWs) are at an increased risk of catching and spreading Coronavirus Disease 2019 (COVID-19) compared with the general community, putting health systems at risk. Several jurisdictions globally have mandated or are looking to mandate COVID-19 vaccines for this cohort, but little is known about the acceptability of this measure, especially in different contexts, and there is little qualitative data to explore nuance, depth, and the reasons behind HCWs' opinions.
Methods: In-depth semi-structured qualitative interviews were undertaken with 39 HCWs in Western Australia (WA) between February-August 2021, ascertaining their views on the prospective introduction and implementation of mandates for COVID-19 vaccines. Data were thematically analysed using NVivo 20.
Results: There was broad support for COVID-19 vaccine mandates for HCWs amongst our participants, but also different views about what such a mandate would mean (redeployment versus termination) and how it would impact the rest of the workforce. One vaccine hesitant participant said that mandates would be their prompt to get vaccinated. Other participants invoked an informal code whereby HCWs have an obligation to be seen to support vaccination and to protect public health more broadly. However, they also raised concerns about implementation and procedural and policy fairness.
Conclusion: Policymakers should consider how to mobilise the informal code of health promotion and public health support if introducing mandates. They should also consider whether HCWs will bring the same attitudes and approaches to mandates for additional vaccine doses.

Public interest summary

Western Australia (WA) had a unique pandemic experience with almost no COVID-19 for two years. However, Australia has a strong history of mandating vaccines for childhood diseases; some states also mandate influenza vaccines for healthcare workers (HCWs). We wanted to know what HCWs thought of COVID-19 vaccine mandates being introduced in WA. We interviewed 39 of them in the first six months of the rollout, before mandates were introduced. While most supported mandates and were either vaccinated or intended to be, there were diverse views about whether non-compliers should lose their jobs or be redeployed away from the public. Several participants said that people who work in health should support – and be seen to support – public health initiatives, which in their view justified supporting a vaccine mandate for COVID-19 vaccines. The WA government introduced a 'hard' mandate after our study and HCWs who did not get vaccinated lost their jobs

Introduction

Health care workers (HCWs) have frequently been subject to vaccine mandates in diverse contexts globally, facing requirements to be vaccinated against measles and hepatitis B, as well as to receive annual influenza vaccinations [1–4]. Governments and healthcare organisations have historically implemented healthcare vaccine mandates because HCWs perform essential roles and have the potential to infect their patients – many of whom are particularly vulnerable to disease. Previous infectious disease crises, such as the H1N1 swine flu pandemic, also cued some governments and organisations to mandate vaccines for HCWs. The consequences for HCWs failing to adhere to vaccine mandates have included fines, worksite changes, mask opt-outs and changes to employment status, including termination [1]. Perhaps due to these consequences, Babcock et al. [5] and Esolen and Kilheeney [6] have found that HCW mandates are highly effective in boosting vaccination

* Corresponding author.
E-mail address: Katie.attwell@uwa.edu.au (K. Attwell).

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rates; a recent review by Schumacher et al found that these measures increase vaccine coverage more than any other strategy [7].

A meta-analysis on HCWs views on mandatory influenza vaccination which included reviews from 20 countries found that the majority supported the measure [8]. However, vaccine mandates can be a controversial policy instrument more generally. Recent analyses of new mandatory childhood vaccination policies in various high-income countries demonstrate a range of drivers for governments to resort to mandates; these sometimes include political pressures and governance failures [9,10]. Jurisdictions that already mandated vaccinations for children – such as Italy, France, Australia and California – were at the forefront of recent policy changes to make vaccine refusal more consequential for parents, indicating the role of path dependence in governments adopting such policies [11,12]. When jurisdictions make vaccinations mandatory for any sub-population – be they children, workers in specific industries, or other groups – there are a range of relevant factors they may need to consider, including instrument design, exemptions policies, and public acceptability [13]. Scholars have found public opinion on vaccine mandates to be shaped by risk perceptions and whether one has a hierarchical or egalitarian worldview [14]. Political beliefs can also be a predictor of attitudes towards mandates in some jurisdictions, but play smaller roles in others [15,16].

With the advent of Coronavirus Disease 2019 (COVID-19), governments have deployed COVID-19 vaccine mandates for general and specific populations [17]. Governments which had already mandated childhood vaccinations were swift to implement COVID-19 mandates for adult populations [17], although countries without childhood vaccine mandates also did so. With significant attention turning to the personal risk and well-being of frontline HCWs, as well as their capacity to infect patients, [18,19] many jurisdictions introduced mandates swiftly in the pandemic requiring HCWs to be vaccinated in order to retain employment. In April 2021, following horrific early waves of infection, Italy was the first jurisdiction to make COVID-19 vaccination mandatory for all HCWs, with refusers facing transfers or being stood down [20]. Many other countries followed suit, including Germany,[21] New Zealand [22] and France [23].

If governments believe that a vaccine mandate is necessary, then acquiring an understanding the opinions and beliefs of the targeted population is important. Doing so can assist in designing an optimum policy and limiting reactance [24]. However, when it came to emergency policymaking for COVID-19, vaccine mandates for HCWs were generally well ahead of the evidence base. A limited number of studies on HCW attitudes towards COVID-19 mandates were published during the pandemic globally, and most focused on high income countries, with supply problems making mandates unfeasible in the developing world. These existing global studies, which we review in the next few paragraphs, found mixed HCW attitudes regarding the prospect of their jurisdictions or organisations introducing COVID-19 vaccine mandates covering their workforces.

Amongst the small number of studies our literature search unearthed, there are diverse findings from vastly different jurisdictions. For example, in a cross sectional study, HCWs in Mongolia showed higher support for mandatory COVID-19 vaccination (93.7%) compared to general vaccination (77.8%) [25]; the authors indicate that both figures are remarkably high compared to global comparators for other vaccines. By contrast, an online study of a broad occupational range of HCWs conducted in the Australian state of Victoria by Kaufman and colleagues found that only 50.4% of participants supported HCW vaccine mandates for COVID-19 [26].

Extant work does indicate that HCWs' attitudes towards COVID-19 mandates are likely to be informed by the individual's specific profession. Ledda et al surveyed HCWs in Southern Italy prior to the availability of vaccines, predominantly capturing data from physicians and nursing staff, and found that more than half were opposed to the COVID-19 vaccine being mandated. Support for COVID-19 mandates was lower than support for HCW mandates for other vaccines. However, Ricco et al.'s study of Italian physicians found that nearly two thirds of this smaller and more homogenous group supported mandates [27]. Work led by Shaw et al in a US University hospital found that two thirds of HCWs preferred voluntarism for COVID-19 vaccines, with scientists and physicians being the only HCWs supporting mandates [28].

While most of the limited published studies of HCW attitudes towards COVID-19 mandates are quantitative, some qualitative work has been conducted in Switzerland and the United Kingdom – two countries in which routine and occupational vaccination programs have been voluntary. Dietrich et al's study of 27 HCWs in Switzerland found that participants expected resistance to COVID-19 mandates, with participants saying mandates would put them off working in the system or that they expected mandates would push others out of their roles [29]. Bell et al.'s study suggested that HCWs in the UK who felt more pressure to be vaccinated were less likely to do so, with the authors suggesting that mandates not the best option to encourage high rates of vaccination [30].

Little is known from a qualitative perspective about the attitudes and perspectives of Australian HCWs regarding vaccine mandates for COVID-19. Unlike the cohorts studied in Switzerland and the UK, which have voluntary vaccination and relatively low support for vaccine mandates more generally [31], Australian HCWs are highly familiar with vaccine mandates for childhood diseases, which have been in place since 2016 and are widely popular with the general population [15]. Accordingly, during the first six months of the COVID-19 vaccine rollout in Australia, we sought to understand the attitudes and perceptions of West Australian (WA) HCWs regarding a potential mandate for their workforce. Conducting research as part of the larger project *Coronavax: Preparing Community and Government*, we aimed to understand what would make mandate implementation feasible, as well as potential issues and resistance, through our qualitative interviews with HCWs in the public, private and community sectors.

Policy context

The WA government has required HCWs to demonstrate vaccination or immunity for particular pathogens (such as hepatitis B) upon commencement with the Health Department for a number of years. In 2020, during the pandemic, HCWs working for the state health department were required to participate in a 'mandatory declination' process for influenza vaccination, whereby they provided their vaccination status and formally declined the vaccine in writing if they chose not to receive it [32]. Other Australian states (e.g. New South Wales) made influenza vaccines mandatory that year for the first time, for HCWs working in high-risk environments [33].

Australia started its COVID-19 vaccination program in February 2021 with a phased approach based on risk of severe disease [34]. Frontline HCWs in specific roles were among the first in Australia to be vaccinated given their increased risk of exposure in the workplace, receiving either the Pfizer-BioNTech BNT162B2 vaccine (the "Pfizer" vaccine) or Oxford–AstraZeneca AZD1222 (the "AstraZeneca" vaccine) [35]. As vaccine supply increased, all HCWs became eligible [36].

HCWs in WA, Australia's geographically largest state with a population of approximately 2.6 million people [37], were initially able to access a COVID-19 vaccine through state-run hospital mass vaccination clinics [38,39]. After the vaccine program changed to decrease the risk of thrombosis with thrombocytopenia syndrome following AstraZeneca vaccination in younger adults [40], vaccine shortages ensued, given the federal government's strategy had been to rely on locally-made AstraZeneca as the mainstay for vaccinating the population. HCWs retained priority access despite the change but since supply was not equally distributed, some faced access barriers. When we started collecting our data, the vaccination rates for HCWs across the state were not known, as there was no data breakdown by profession.

While it was not mandatory for any Australian HCWs to receive a COVID-19 vaccine during our study, HCWs were increasingly required

to have at least one dose of COVID vaccine, starting in New South Wales in September 2021 [41]. This occurred in the context of an ongoing Delta variant outbreak in Australia's most populous states, New South Wales and Victoria. In contrast, WA detected no community transmission of COVID-19 for more than a year. Despite this, in October 2021 (after our data collection had finished), the WA government introduced a mandate requiring public and private health care and support workers to have had at least their first dose of a COVID-19 vaccine to access tier one facilities, which included intensive care units, emergency departments and respiratory wards [42]. In announcing the mandate, WA's Minister for Health explained that despite there being no community transmission in WA at the time, the mandate was necessary due to the possibility of health care workers coming into contact with the virus. Due to the integrated nature of the system, the mandate would protect patients, workers and the community [42]. The mandate subsequently extended to all HCWs, with all needing to have received two doses by 1 January 2022 [43]. We return to the extension and further implications of WA's mandate at the end of our article.

Methods

Detailed methods for the Coronavax study have previously been published in the study's open access protocol [44]. In brief, recruitment of WA-based HCWs commenced in February 2021 when the project's data collection phase began, using media promotion, word-of-mouth and snowballing. Interested individuals signed up via an online REDCap [44,45] survey, which collected demographic data and contact details. Prospective participants identifying as working in "health care and social assistance," were contacted up to three times each by telephone and / or email to organise a face-to-face or telephone interview. These one-on-one interviews were undertaken by SJC, an experienced qualitative researcher, assisted by a team of junior researchers mentored by experienced co-authors (SJC and KA). Interviews were approximately 60 min in length, and were conducted between 3rd March – 7th August 2021.

All interviews followed a semi-structured guide which included questions about attitudes towards different types of potential mandatory vaccination policies, including the circumstances in which participants would support them, and participants' perspectives regarding the types of exemption categories that should be available (see detailed question guide in protocol) [44]. Additional questions for HCWs further addressed COVID-19 mandates that would affect them in their employment. As all general Coronavax and specific HCW questions were developed prior to the publication of the relevant HCW COVID-19 mandate literature reviewed above, our interdisciplinary study team – consisting of a range of experts in vaccination social science and including a HCW – collaboratively designed and tested the questionnaires with a wider network of volunteers, including student volunteers studying in healthcare disciplines. The conduct and content of the HCW mandates component of the interviews was as follows: During the interviews, participants were informed that some Australian and overseas jurisdictions were mandating vaccines for HCWs and that we sought information on their views about potential COVID-19 vaccine mandates, with the proviso that medical exemptions would be available. Participants were then asked whether they thought COVID-19 vaccination for HCWS such as themselves should be completely voluntary, whether those who refused vaccination should be removed from public / patient contact, or whether refusers should lose their jobs, and offered the opportunity to raise other related issues. Due to the semi-structured nature of the interviews, some participants returned to discussing HCW mandates at other points during the conversation, and all such data was analysed for this project.

Pharmacists were a key group we spoke to about HCW mandates as they also answered questions about being vaccinators as part of a separate study. At the time of data collection, pharmacists were not dissimilar to other HCWs in our sample in terms of their exposure to or engagement with individuals infected with COVID-19, as there was little to no community transmission in 2021 in WA. Pharmacists do, however, engage with the wider community due to their location in retail outlets in shopping centres and malls as well as within or adjacent to medical services. Accordingly, they are frequently exposed to individuals with other comorbidities who are at risk of serious consequences from COVID-19 infection. Some pharmacists we interviewed had undergone training to vaccinate the public against COVID-19 as their pharmacies were participating in the vaccine rollout, but only a handful of pharmacies operating outside of the Perth metropolitan area were actively vaccinating the public during our study period.

All interviews were audio recorded and transcribed verbatim, then the specific questions and answers pertaining to HCW employment mandates were collated and coded by the first and senior authors through an iterative process, using NVivo 20. Deductive analytical methods were used to categorise participants' attitudes towards being vaccinated and their perspectives on COVID-19 vaccine mandates. We used theoretical frameworks for both exercises that we had developed for earlier Coronavax studies – one on individuals' COVID-19 vaccine intentions [46], and an earlier publication on publics' attitudes to widespread societal mandates [17]. We used these frameworks to categorise participants as either COVID-19 vaccine acceptors, cautious acceptors, "wait awhiles" or refusers. We classified participants' mandate attitudes as either supporting; having nuanced perspectives; or opposing HCW mandates [17]. Inductive methods consisting of coding "in vivo" were also employed to draw out emergent themes [47], especially pertaining to the nuances of implementation. We present our findings from both deductive and inductive methods below, explaining overall attitudes with examples from our data, and then demonstrating further nuance from our inductive analysis.

Participants gave informed verbal or written consent to be interviewed and pseudonyms have been used. Ethics approval was granted by the Child and Adolescent Health Services Human Research Ethics Committee (RGS0000004457).

Results

Overall, we interviewed 39 participants, 20 of whom were pharmacists (51%). Of the remaining participants, many were nurses or midwives (n = 9, 23%; Table 1). Given the high proportion of pharmacists, many (49%) of the participants overall worked in private clinics, while 28% worked in public hospitals. 79% of all participants had received at least one COVID-19 vaccine dose at the time of the interview. Of the eight participants unvaccinated at the time, six intended to be vaccinated but had experienced difficulties with access. We classified these six plus the vaccinated participants as "COVID-19 vaccine acceptors" based on their confident and emphatic support for being vaccinated. However, two of our participants – both of whom had not yet been vaccinated – had unresolved hesitancy about the vaccines that led us to classify them as "Wait Awhiles" [46].

Overall support for workplace COVID-19 mandates for health care workers

Building on their strong support for being vaccinated themselves, the majority of our participants supported governments or health providers mandating COVID-19 vaccines for HCWs, to protect both HCWs and patients.

> *I think [a mandate would] be a step in the right direction.* – Matt, allied health

Many reported that their colleagues concurred with this perspective. For most participants, a mandate would not affect their own behaviour as they were either vaccinated already or intended to be, and would "*understand if [their] employer said 'you cannot continue in the job you're doing'*" if they were not vaccinated (Bronwyn).

Two participants, both pharmacists, remained hesitant about COVID-19 vaccines at the time of our study. Nadine stated that she would take the vaccine only once it became mandatory, and she did not believe that anybody should have to get vaccinated:

I do n't think it's right to actually obligate anyone to get vaccination itself… Even if they are health care professionals. I mean, it's good to talk to them about the importance of it, for them and for the patients. But I do n't think it should be compulsory.

Other participants believed that vaccines should be mandatory only if the safety of the vaccine was guaranteed, or adequate compensation was available to those who sustained rare side effects. However, Jason said the possibility of rare serious side effects occurring is not a valid reason to not mandate COVID-19 vaccination:

I guess the sticky point is that if there is a risk and there is a risk for the odd person here and there, the one in a million, and that happens to be you or someone you love that's terrible, that's awful, but I think that … what do they call it in war time, collateral, acceptable form of collateral damage, which sounds harsh. I mean, it would be absolutely awful for any family to lose someone to the jab… However, you're talking about twenty odd million people. And in places where there's millions and millions of people, then you have to do it, I'm afraid - Jason, management

Discrepancies around settings

Despite the broad support for HCW mandates that we identified above, one of our emergent findings was that the imagined details of mandates tended to differ between participants. Some envisaged that mandates in a hospital setting would or should apply only to specific frontline roles, and that different forms of epidemiological justification would apply in different settings.

I think in terms of the risk to your patients, I think it's very reasonable then to perhaps insist on people having vaccinations in aged care. [But in healthcare there's] people doing population health, community, outpatient, so on and so forth. So for some it's not, perhaps, as easy decision – Alma, doctor

Alma ultimately believed that only those who work with respiratory, oncology or ICU patients should have COVID-19 vaccines mandated. Having mandates only for selected roles might mean that non-compliers would be re-deployed in different areas, rather than losing their jobs altogether. Many other participants supported this idea.

I struggle with making it mandatory … but at the same time I think it should be: you can't work in these settings or, you know, you have restricted access – Steph, nurse

I think that they should n't be removed or, you know, get stripped from the job just because you're not getting vaccinated – Keaton, pharmacist

However, participants who were more strongly supportive of HCW mandates viewed them as an intervention that would and should apply across the board, and spoke decisively about vaccine refusers not being able to continue to work in their field.

If you work in an environment where you should have it, then you have to choose other employment. Elodie, pharmacist

I feel like they should n't actually work, to be honest – Toby, doctor

Moral codes and avoiding bad outcomes

A subset of participants invoked an informal code whereby HCWs should protect the well-being of the community. Some raised the notion that HCWs had a responsibility to be seen as supporting vaccinations, and used this to justify their support for imposing consequences on refusers. For example, Karson, a pharmacist, said that those who were "*not part of the solution*" were *"part of the problem."* Their refusal might prompt the public to think, "*Oh, health care professionals aren't being vaccinated, so then why should I?*"

Pharmacist Kim also invoked the informal code:

"Within any profession, you have varying degrees of opinion, but I would assume you would do what's best for the public. When you are a health professional, that's your job…"

However, Kim believed that removal from patient-facing roles would be the most appropriate consequence for HCWs refusing vaccines rather than outright dismissal. Pharmacist Renzo likewise believed that the moral duty to protect vulnerable patients should not extend to a full mandate:

Given we work on the frontline, where we come in contact with sick people, then you know, it's a responsibility… [although] it should be not mandated, but highly recommended.

Pharmacist Amisha suggested that mandates were an important risk mitigation factor against blame later being laid on HCWs who might have spread disease (and systems which enabled this).

I think if somebody is going to get infected, then … all these people that [say] "Oh, well, I have n't been vaccinated," and it's like, "well, you should have!" So that's where the mandatory comes in.

But Kim had a note of caution about the longer-term potential for mandates to backfire:

If you force someone to take a vaccine, now, they may not take the booster later on. You're going to have to keep mandating these people to take these things. And you're going to lose the trust of the public. People may change jobs, they may do other things. And it may cause other problems. The idea is to empower the people in order to understand why it's best for them to actually do this.

Concerns about implementation

Despite most participants broadly supporting the idea that HCWs would be subject to a COVID-19 vaccine mandate, several were concerned about what this would mean at an implementation level, including workforce, privacy, and logistical issues.

Given that hospital-based workers often believed that non-compliers would be given alternative roles, some were concerned that this would place those who did the 'right thing' by vaccinating in riskier roles, such as being put in the "red zone" of the emergency department where patients suspected of being COVID-19 positive are placed.

Because I'm vaccinated, why I should be put in the red zone… and other people not? Because I've chosen to take those risks associated with the vaccine, I do n't see why other people can avoid those risks and avoid the risks associated with exposure as well – Florence, nurse

Steph echoed Florence's concerns about equity and not rewarding refusal. Redeploying an unvaccinated HCW to do administrative work away from patients should not come at the cost of a vaccinated HCW:

Like, they should n't get all the reward. 'Cause the admin part's quite good! Sometimes it's, like, the nice part of the day…Why should I have to change my job or the way I work because of the choices that [they] made? – Steph, nurse

Some staff were concerned that through the mandates, there would be an expectation to physically show their patients that they were vaccinated, which felt like an invasion of privacy. Emergency department nurse Esmeralda, who told stories about how unsafe she feels in her workplace, said:

I would have a problem showing a member of the general public my vaccination status, 'cause I do n't even have … like my badge does n't

have my name on it, I refuse to have any identifying … like I'll introduce myself as [name], but that's as much as you know about me.

Those HCWs who saw mandates resulting in job termination were concerned about the impact on staffing. Some worried that the healthcare system may lose staff due to the legislation, with nurse Florence sharing: "*I do n't know how we're gonna go if we lose any more nurses [in ED] because of mandatory vaccinations."* Many participants consequently believed it would be easier or fairer to introduce a mandate at the time of employment, rather than for existing employees.

…To just take their job away from them would be wrong. [But] if people are being interviewed or if it's made very clear either at interview or even when the job is advertised, then that's fair enough. Because people go into it with their eyes wide open, they know exactly what the job entails, and if you have to be immunised, then they know not to apply. So I think that's a really good idea to be very upfront going forward – Bronwyn, nurse

However, Esmerelda regarded that approach as unfeasible during a pandemic:

[Mandating it for new staff] won't solve the problem. You can't have some people vaccinated and some not, because the people that are n't vaccinated working on the front line will be transmissible. I mean, not everyone gets symptoms, so how do you know when I lean over you to stick a needle in your arm and I breathe on you that, oh sorry, I just gave you COVID, 'cause I'm not vaccinated – Esmerelda, nurse

Drawing from the influenza experience

In discussing their attitudes towards a workplace COVID-19 vaccine, some participants drew on past experience of annual influenza vaccine programs or mandates in their workplaces. Sarah, whose role required her to attend aged care facilities where attendees needed to be vaccinated against influenza, described her non-compliant colleagues being relegated to office duties. She said *"most of us do n't agree with"* that strategy. *"I'm like, well, we work in health, you should be vaccinated, unless you have a medical reason not to do so."*

Steph predicted that COVID-19 mandates for health care workers would have a similar impact as influenza mandates on staff uptake: *"Cause we all have to get the flu [vaccine], but there's some that will only get it because they literally have to, but not because they actually support the vaccine."*

Although Esmerelda was vaccinated against COVID-19, she revealed that she does not partake of the annual influenza vaccine, which was not mandatory for her role at the time. She noted that if that particular vaccine was made mandatory for her role, it would be a *"sticking point."*

Attitudes towards nonmedical exemptions

Participants were quick to agree that medical exemptions were appropriate for COVID-19 vaccine HCW mandates, but most believed that exemptions should not be given for any other reason. They took a dim view of personal belief exemptions, which Sarah described as "*hogwash*". "*We are a society,"* said pharmacist Anja. *"… So you have your personal beliefs, but if it affects the society, it's not personal anymore*." Matt, an allied health worker, concurred:

I understand that people have conscientious objection, [but] … it's gone beyond that. … We're talking about an enormous number of lives. I mean, like, we're facing polio again or smallpox or something, you know. It's that level of absolute turmoil and disruption that can kill and maim so many people. I mean, it's absurd that it's not becoming more mandatory!

Several participants stated that no religions precluded COVID-19 vaccination, although a small number noted that any such issues could or should be worked out with religious authorities or vaccine manufacturers to find alternatives. A minority were concerned that religious objections might be falsified.

In exception to the general disdain for non-medical exemptions, one participant recounted a pregnant HCW colleague who was not comfortable receiving a COVID-19 vaccine, and shared their belief that an exemption should be available on that basis. Another stated that they thought exemptions for religious or personal beliefs would provide a useful opportunity for counselling by a medical professional.

An incomplete project

Some of our participants reflected that mandating vaccines for HCWs was not a sufficient exercise in and of itself, or considered it was not appropriate when other avenues for promoting vaccination or protecting the vulnerable had not been pursued. Emma and Alma believed that not yet enough had been done to make access to COVID-19 vaccination easy for HCWs and indeed the rest of the population:

No point saying you've got to have a mandatory vaccination where you have n't actually got your vaccine rollout sorted and people can't actually get vaccinated – Alma, doctor

A couple of participants further pointed out that mandatory COVID-19 vaccination of some people in a healthcare setting still would not protect everybody. Kate said that if vaccination is mandatory for HCWs, then it should also be mandatory for those visiting healthcare facilities too.

Discussion

This research, conducted within the first six months of the COVID-19 vaccination rollout in WA, found HCWs broadly supported vaccine mandates for their workplaces. Compared to some of the studies undertaken in other industrialised countries, our HCW participants were remarkably more positive about vaccine mandates for COVID-19 that would cover their professions, and show more similarity to attitudes regarding mandatory vaccines for pathogens other than COVID-19 [8]. Existing data shows that for those HCWs needing extra motivation, coercive policies such as mandatory vaccination can change behaviour [48]. Only two of our HCWs were delaying vaccination for hesitancy reasons, and for one of them, the mandate would be the activator to finally get the vaccine, which echoes recent findings in NSW [49].

Our participants' broad support for COVID-19 mandates can be explained by several factors, including a pre-existing influenza vaccine mandate for aged-care workers, the pre-existing mandatory declination policy for influenza introduced for WA HCWs introduced in 2020 [32], and general high support for vaccine mandates amongst the Australian population for childhood [50] and COVID-19 [51] vaccines. The attitudes of WA HCWs also need to be considered in light of the fact that the state had been almost completely unscathed by COVID-19 due to border closures. The population and its HCWs were operating in a 'bubble' with no COVID-19, but watching the disease ravage their counterparts in other parts of the world.

However, our participants' support for mandates did not necessarily translate into support for the kinds of strict policies that the WA government subsequently introduced [52]. WA's subsequent HCW vaccine mandates made COVID-19 vaccination a condition of continuing employment, providing no redeployment options and very few exemption pathways. Many participants, by contrast, envisaged more selective mandates that would apply to key wards and would enable the placement of vaccine refusing personnel in alternative roles. Some saw this as a point of contention if refusers were able to secure safer or more desirable positions and duties. For others, redeployment provided a more tolerant or compassionate approach compared with terminating employment, which would also generate staff shortages in an already stretched workforce.

Participants' different views about vaccine mandates – and different perspectives on the consequences that may ensue – likely connected to

the settings in which they worked, and their previous exposure to other mandates. For example, hospital HCWs would have been subject to other vaccination or immunity requirements as a condition of employment, while community pharmacists would not. This may have informed how individual participants thought about the operation and impact of a mandate. Some professions and services have the capability to redistribute certain professions to administrative (non-public-facing) tasks while others do not; this likely informed how participants thought about the question of redeployment versus termination. Some participants also approached the issue from a risk perspective in terms of putting patients and colleagues in harm's way. This, when combined with the 'informal code' to protect public health, would be a stronger justification for termination rather than redeployment of non-compliers.

The nuances we have identified around how HCWs imagined mandates would work and the practical implications of their implementation have not been captured in existing quantitative studies. We suggest that future quantitative work tries to tap into these dimensions. However, while some of the participants in this study were considering HCW mandates being applied to their professional setting for the first time, and others were familiar with mandates for other diseases, familiarity or experience with existing mandates only appeared to affect *how* participants thought they would apply, rather than *whether* they should be introduced.

Despite some participants drawing on their influenza vaccine mandate experiences, COVID-19 vaccine mandates are the first vaccine mandates with serious ramifications for HCWs in WA. If a HCW chooses not to receive an influenza vaccine [32], they just need to complete a form to decline the vaccine, with no ramifications. However, if a HCW chooses not to be triple vaccinated against COVID-19 and lacks an adequate exemption, they lose their employment. Perhaps the difference in policies stems from the *purpose* of the mandate and who or what it is protecting. The stated purpose of the COVID-19 vaccine mandate is to "address the unique risks posed by COVID-19 in health are settings in order to limit the spread of COVID-19 in Western Australia and ensure critical healthcare facilities are available to help manage the current public health state of emergency" [52]. Compare this to the purpose of the influenza mandatory declination policy. In seeking "to reduce the risk of staff members of WA health system entities from acquiring and transmitting influenza"[32], it seems to be more about protecting *individuals* within a health system rather than the system itself.

It is also now mandatory for those visiting a healthcare facility to be vaccinated against COVID-19, which delivered on Kate's point about the mandate for HCWs being an incomplete project [53]. However, visitor vaccination requirements have never been in place for influenza vaccination (although they have applied to aged care facilities). Therefore, despite some HCWs predicting that a prospective COVID-19 vaccine mandate would have a similar impact to the influenza mandator declination policy, it's likely the COVID-19 vaccine mandate will have had a far *greater* impact on uptake, given HCWs risked losing their jobs and income if they did not vaccinate. The risk, of course, is that employees covered by a mandate choose to leave their jobs instead of vaccinating. The implementation of the HCW mandate in Western Australia following this study led to a loss of 0.1% of workers from the Department of Health, according to one source [54]. Even though this number does not appear to be significant, it still may have exacerbated the staffing shortages that some of our participants worried about.

Some of our participants raised ethical and program-based considerations. These include the idea that vaccines should not be mandated unless there was a no-fault compensation scheme in place for vaccines injuries (the implementation of such a scheme was announced just after we finished data collection [55]) and that governments need to ensure access and implement other non-mandatory measures to promote uptake. We have advanced these ideas elsewhere, including considerations of the specific issue of mandating COVID-19 vaccines for HCWs [56]. Notably, a key point in that analysis was that mandated vaccines need to be effective in reducing transmission, a factor that may have influenced WA's recent decisions to mandate third doses for HCWs in the setting of community transmission with the Omicron variant.

This study has some limitations. Participants self-selected to be involved, which may have led to bias about vaccination, although it is not clear in which direction. It was a non-representative sample. Qualitative work cannot be generalised to wider populations. This is significant even between Australian states, given that they have had such different local experiences of the pandemic. However, the experiences and identities of HCWs is still relevant for consideration and comparison with other states and countries. Different interviewers collected the data reported in this study. This was mitigated by expert coaching from experienced qualitative methodologists and the use of a semi-structured interview guide.

Conclusions

Longer-term, the effect of COVID-19 mandates for HCWs will need close attention, and would benefit from rigorous implementation evaluation [57]. The WA Government announced in December 2021 that a third dose would be regarded as necessary for all local workers covered by its workforce mandate (including HCWs) as of February 5 2022, and workers must now be vaccinated within a month of becoming eligible for that third dose [52]. The waiting period for third doses was simultaneously reduced, meaning that many workers had to secure vaccinations quickly to remain compliant as they became eligible. The two-dose mandate would have terminated the employment of those HCWs who did not want to be vaccinated at all against COVID-19, ostensibly leaving in place a more vaccine-compliant workforce. However, adding requirements for additional doses will not necessarily meet universal and ongoing support and compliance.

Nevertheless, the 'informal code' identified by several of our participants is a reassuring reflection that HCWs expect of themselves and each other a commitment to public health and protecting vulnerable patients and colleagues. Future research and interventions could focus on how to build and enhance this code to encourage compliance with what is likely to be an evolving and expanding regime for COVID-19 doses, and which is likely to be underpinned by ongoing mandates in a range of jurisdictions.

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Ethical approval

Participants gave informed verbal or written consent to be interviewed and pseudonyms have been used. Ethics approval was granted by the Child and Adolescent Health Services Human Research Ethics Committee (RGS0000004457).

Author statements

Katie Attwell (KA) conceptualised the project, co-developed the broader study methodology with Christopher C. Blyth (CCB), led the funding attainment, and supervised the conduct of the broader research project. She co-led the coding and write up of the data with Samantha J. Carlson (SJC), who conducted half the interviews and contributed to data collation and interpretation and article drafting. Leah Roberts (LR) conducted the literature review and contributed to article drafting. Christopher Blyth (CCB) participated in funding attainment and overall project leadership, and contributed to article drafting.

Declaration of Competing Interest

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