

Experiences and perspectives of cancer stakeholders regarding COVID-19 vaccination

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COVID-19 Cancer Stakeholder Authorship Group

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Abstract

Aim: The risk of dying from COVID-19 is higher for those who are older, immune-compromised, or chronically ill. Vaccines are an effective strategy in reducing mortality and morbidity from COVID-19. However, for COVID-19 vaccination programs to reach full potential, vaccines must be taken up by those at greatest risk, such as cancer patients. Understanding the perspectives of all stakeholders involved in cancer patient COVID-19 vaccine uptake will be critical to ensuring appropriate support, and information is provided to facilitate vaccination. The aim of this research was to explore the longitudinal views of cancer stakeholders regarding COVID-19 vaccination.

Methods: Semistructured interviews were conducted with cancer patients ($n = 23$), family members ($n = 10$), cancer health professionals ($n = 19$), and representatives of cancer nongovernment organizations ($n = 7$) across Australia 6 and 12 months postrecruitment. Transcripts were thematically analyzed, using an inductive approach.

Results: All stakeholder groups expressed mostly positive attitudes toward COVID-19 vaccination, with the following key themes identified: (1) high motivation—vaccination perceived as offering health protection and hope; (2) hesitancy—concern about vaccine hesitancy among the general population, with a minority hesitant themselves; (3) confusion and frustration—regarding the vaccine rollout and patient eligibility; (4) uncertainty—about vaccination in the context of cancer; (5) access to vaccination; and (6) desire for expert individualized advice—on vaccine interaction with cancer treatments.

Conclusion: These findings highlight the COVID-19 vaccine concerns and information needs of cancer stakeholders. Policymakers need to provide clear tailored information regarding vaccine eligibility, accessibility, benefits, and risks to facilitate vaccine uptake.

KEYWORDS

cancer, COVID-19, qualitative, stakeholder perspective, vaccine

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1 | INTRODUCTION

Coronavirus disease (COVID-19) has had an enormous impact on mortality and morbidity worldwide.^{1,2} The risk of dying from COVID-19 is higher for those who are older, immune-compromised, or chronically ill, such as cancer patients.³ Additionally, a number of hospital-acquired infections and deaths were reported among cancer centers in Australia. For those who survive COVID-19, individuals with comorbidities, such as cancer, have longer recovery times than those without.⁴

Vaccines are an effective strategy in reducing mortality and morbidity from COVID-19.⁵⁻⁷ For the COVID-19 vaccination program to reach its full potential, vaccines must be taken up by those at greatest risk. Cancer patients were underrepresented in the phase 1-3 clinical trials while developing the COVID-19 vaccines available to Australian's—AstraZenca (Vaxzevria), Pfizer (Comirnaty), and Moderna (Spikevax).⁵⁻⁷ Despite this, many organizations internationally recommend the vaccine for people with cancer based on the assumption that the benefits of vaccination outweigh potential risks.⁸⁻¹¹ In Australia, adults with a specified medical condition (i.e., cancer patients) were able to access COVID-19 vaccines from March 2021.^{12,13} Despite a relatively slow uptake of the vaccine initially in Australia, as of December 2021, 89.1% of people over the age of 16 were fully vaccinated.^{14,15}

International research has reported that while the majority of cancer patients intended to be vaccinated as soon as the COVID-19 vaccine was available, there were still a proportion who were undecided or hesitant about vaccination.¹⁶⁻³⁰ The research indicates that cancer patients who are female,^{20,21,23,27,29,30} younger in age,^{20,21,23,24,27,30} less educated/health literate,^{19,23,24,26,27,29,30} have worse health status,^{20,22} and are non-white^{21,27,29} are more likely to be hesitant. Commonly reported barriers to vaccine uptake include lack of confidence in science and vaccine efficacy,^{16,19,21,23,24} fear of side effects,^{16,21-26,30} belief that COVID-19 is benign,^{16,23,25} and concern about vaccine impact on treatment.^{18,22,26} Only one of these studies on attitudes toward COVID-19 vaccination included Australian respondents, the proportion of cancer patients, however, was not reported.²⁷

The published literature on attitudes toward and factors associated with COVID-19 vaccination has focused on cancer patients' perspectives alone. There are a few stakeholders that have the potential to influence cancer patients' uptake of COVID-19 vaccinations, including cancer patients' family members, oncology health professionals (HPs), and cancer nongovernment organizations (NGOs). The aim of this research was to comprehensively explore the views of all these stakeholder groups regarding COVID-19 vaccination.

2 | METHODS

This was a substudy of a longitudinal qualitative study involving semistructured interviews with four groups of cancer stakeholder, exploring attitudes to and experiences of COVID-19 vaccination.

Eligible participants were adult cancer patients (18 years and over) currently receiving treatment (chemotherapy, radiation therapy, hormone therapy, targeted therapy, immunotherapy, or surgery) or within 6 months of treatment (except ongoing hormone therapy); family members of adult cancer patients currently receiving treatment; oncology HPs; and representatives of cancer NGOs. Non-English speaking or incapacity to give informed consent were exclusion criteria.

Participants were recruited through an email invitation via national professional or consumer organizations, two NSW hospital-based oncology services and via snowballing (HPs forwarding the email to colleagues nationally). A participant information sheet and consent form were accessible via a link embedded in the email. The research team contacted interested participants to schedule a telephone interview. Recruitment continued until theoretical saturation (no new themes emerging after three consecutive interviews).³¹

The longitudinal qualitative study collected qualitative data at baseline (consent) and two timepoints post consent: 6 months (T1; March–June 2021), and 10–12 months (T2; August–October 2021). Semistructured interviews were conducted by experienced qualitative researchers. Only the follow-up interviews at 6 months and 10–12 months explored attitudes toward and experiences with COVID-19 vaccination (Supporting Information—Interview guide 6 months; Supporting Information—Interview guide 10–12 months), thus, only data from these interviews are reported here. These data collection timepoints coincided with the second wave of COVID in NSW (June–ongoing 2021) and the ACT (September–ongoing 2021) and Victoria's third wave (July–November 2021).

2.1 | Analyses

Interviews were audio-recorded, transcribed verbatim, anonymized, uploaded to NVIVO 12, and subjected to thematic analysis using framework analysis to compare and contrast themes across stakeholder groups and timepoints.³² A preliminary coding structure was developed inductively through an iterative process. The research team individually familiarized themselves with three to six transcripts from each stakeholder group, reading the transcripts line-by-line, and applying a code to relevant text. Initial codes were aggregated into categories, which formed the coding structure that was applied to the remaining transcripts. Categories were added and revised as required. Themes were developed from the categories alongside characteristic quotes. Throughout this process, differences between researchers were resolved through consensus.

This research was approved by the University of Sydney Human Research Ethics Committee (HREC) and Sydney Local Health District HREC (2020/351 and 2020/ETH01184, respectively). The methods and results presented below follow the consolidated criteria for reporting qualitative research.³³

3 | RESULTS

Of the 23 patients interviewed, 78.3% were female, 47.9% located in NSW, and 34.8% were breast cancer patients (Table 1). Family members were mostly female (90.0%) and were the spouse or partner of a patient (90.0%) and had a medical condition themselves (60.0%). Oncology HPs ($n = 19$) and cancer NGO representatives were female, with the largest proportion employed as nurse/cancer care coordinators (36.8% and 57.1%, respectively).

Thematic analysis of the interviews revealed six main themes: (1) high motivation—vaccination perceived as offering health protection and hope; (2) hesitancy—concern about vaccine hesitancy among the general population, with a minority hesitant themselves; (3) confusion and frustration—regarding the vaccine rollout and patient eligibility; (4) uncertainty—about vaccination in the context of cancer; (5) access to vaccination; and (6) desire for expert individualized advice.

3.1 | High motivation

All stakeholder groups expressed pro COVID-19 vaccination attitudes and were eager to be vaccinated. These attitudes stemmed from feelings of social responsibility: getting vaccinated to protect the community and lead by example. The COVID-19 vaccine was viewed as providing hope that the country would reopen, people could return to work, volunteering, and travel. Most interviewees' positive attitudes toward vaccination were framed as a desire for safety or protection from COVID-19 transmission.

'I am definitely not an anti-vaxxer or hesitant person... As soon as it's available and I can get an appointment, it's getting done.' Patient304, Prostate, T1

'Roll on the vaccine... it would be nice to be back to normal.' Patient301, Prostate, T1

By 12-month interviews, all interviewees were at least partially vaccinated and consequently discussed feeling a level of protection from COVID-19, which also provided a sense of relief.

'Because we are immunized... our children are saying we're not as anxious as last year... we may get it, but we hopefully won't end up in ICU... the fact that we are immunized is such a relief.' FM401, Spouse/partner, T2

'He is double vaccinated now. It was much more scary before he had got the vaccination.' FM406, Spouse/partner, T2

'Now that we're vaccinated... you do feel a little bit safer.' HP142, Nurse/Cancer care coordinator, T2

3.2 | Hesitancy

A few patients/family did express hesitancy about the vaccine at 6 months, and some HP/NGO participants reported hesitancy in patients. Hesitancy was due to a belief that COVID-19 is a conspiracy, benign, a perception of insufficient research conducted about vaccine outcomes, fear of side effects, concern about treatment interactions, and impacts on treatment scheduling. Some patients/family acknowledged they were late adopters generally, which carried over to this vaccine. Some patients were advised by their oncologist/GP to put off vaccination and prioritize the flu vaccination.

'I've got one patient who doesn't believe COVID exists... I can't see that he's going to get a vaccination...' HP101, Psychologist, T1

'I don't want to get the vaccine... I'm already on targeted therapy and they don't know the side effects of that... How are they going to know the side effects of the vaccine and what I'm already on?' Patient318, Lung, T1

While all patient/family interviewees were at least partially vaccinated by the 12-month interviews, some acknowledged they still had concerns about the safety and efficacy of the vaccine but had been vaccinated as a requirement of employment or on advice from their oncologist.

'I've got both vaccines. I did that under the guise of [employer] because obviously they were very keen to vaccinate. My oncologist was very keen for me to get vaccinated last year, I was a little bit apprehensive... look at the end of the day, nothing could be worse than what I've already been through... I do feel like people don't really do any research and I do question the vaccine... there's no real research long-term being done on it... It's not like all the other vaccines we have had, but if it works, it works... I do believe if I got COVID, I would be fine.' Patient 318, Lung, T2

At 12-month interviews, some HPs estimated that there were still a small percentage of patients who continued to be hesitant about the vaccine.

'There will still be 5 to 10 percent of people who refuse to get the vaccine for whatever daft reason they believe in... But there will be another 15 or so percent of people who are not bothering now because they're too lazy or too selfish or whatever, who will want to then go and get it once COVID gets here, and they need to wake up to themselves.' HP100, Medical Oncologist, T2

TABLE 1 Interviewee demographics

| | Patients (n = 23) | Family members (n = 10) | Oncology HPs (n = 19) | Cancer NGO representatives (n = 7) |
|--|----------------------|-------------------------------|-----------------------------|--|
| Sex | | | | |
| Female | 18 (78.3%) | 9 (90.0%) | 19 (100%) | 7 (100%) |
| Male | 5 (21.7%) | 1 (10.0%) | | |
| Marital status | | | | |
| Single | 3 (13.0%) | | | |
| Married/de facto | 16 (69.6%) | | | |
| Separated/divorced | 4 (17.4%) | | | |
| Relationship to patient | | | | |
| Spouse/partner | | 9 (90.0%) | | |
| Parent | | 1 (10.0%) | | |
| Born in Australia | 17 (73.9%) | 8 (80.0%) | 17 (89.5%) | 6 (85.7%) |
| Current location | | | | |
| NSW | 11 (47.9%) | 5 (50.0%) | 10 (52.6%) | 3 (42.9%) |
| VIC | 5 (21.7%) | | 5 (26.3%) | 4 (57.1%) |
| SA | 3 (13.1%) | 4 (40.0%) | 1 (5.3%) | |
| WA | 2 (8.7%) | 1 (10.0%) | 2 (10.5%) | |
| QLD | 1 (4.3%) | | 1 (5.3%) | |
| Education | | | | |
| Secondary school | 5 (21.7%) | | | |
| Vocational training | 6 (26.1%) | 2 (20.0%) | 1 (5.3%) | |
| University | 12 (52.2%) | 8 (80.0%) | 18 (94.7%) | 7 (100%) |
| Employment | | | | |
| Unable to work | 2 (8.7%) | | | |
| Unemployed | 2 (8.7%) | 2 (20.0%) | | |
| Job keeper | 1 (4.3%) | | | |
| Part time | 3 (13.9%) | 4 (40.0%) | 8 (42.1%) | 4 (57.1%) |
| Full time | 4 (17.4%) | 1 (10%) | 11 (57.9%) | 3 (42.9%) |
| Retired | 11 (47.8%) | 3 (30.0%) | | |
| Occupation | | | | |
| Allied health | | | 1 (5.3%) | |
| Counselor | | | 2 (10.5%) | |
| Medical oncologist | | | 2 (10.5%) | |
| Nurse/cancer care coordinator | | | 7 (36.8%) | 4 (57.1%) |
| Palliative care physician | | | 2 (10.5%) | |
| Peer support consultant | | | | 1 (14.3%) |
| Program leader | | | | 2 (28.6%) |
| Psychologist | | | 4 (21.1%) | |
| Social worker | | | 1 (5.3%) | |
| Time since diagnosis (at consent) | | | | |
| < 1 year | 8 (34.8%) | | | |
| 1–5 years | 12 (52.2%) | | | |
| > 5 years | 3 (13.0%) | | | |

(Continues)

TABLE 1 (Continued)

| | Patients (n = 23) | Family members (n = 10) | Oncology HPs (n = 19) | Cancer NGO representatives (n = 7) |
|---------------------------------|----------------------|-------------------------------|-----------------------------|--|
| Cancer type | | | | |
| Breast | 8 (34.8%) | | | |
| Prostate | 5 (21.7%) | | | |
| Lung | 4 (17.4%) | | | |
| Bowel | 2 (8.7%) | | | |
| Other | 7 (30.4%) | | | |
| Cancer stage | | | | |
| Local | 10 (43.5%) | | | |
| Locally advanced | 4 (14.9%) | | | |
| Metastatic | 6 (26.1%) | | | |
| Other | 3 (13.0%) | | | |
| Currently on treatment | | | | |
| Not completed | 9 (39.1%) | | | |
| Less than 6 months | 12 (52.2%) | | | |
| More than 6 months ^a | 2 (8.7%) | | | |
| Treatments received | | | | |
| Chemotherapy | 11 (47.8%) | | | |
| Hormone therapy | 8 (34.8%) | | | |
| Immunotherapy | 1 (4.3%) | | | |
| Radiation therapy | 15 (65.2%) | | | |
| Surgery | 17 (73.9%) | | | |
| Targeted therapy | 5 (21.7%) | | | |
| Own medical condition | | 6 (60%) | | |
| Age at consent | | | | |
| Median | 61 years | 60.5 years | 52 years | 45 years |
| Range | 35–77 years | 51–74 years | 29–75 years | 31–64 years |

^aTwo participants had completed all treatment more than 6 months ago, except for ongoing hormone therapy.

'The ones that haven't, it's been a political decision rather than a health decision... the patients... who haven't been vaccinated have told me I'm going against advice from my doctor... they distrust the science behind it... there's been a distrust of the doctors, but a trust of the internet... People who've done their own research online and that research that they've found has disagreed with the medical advice that they've been given... but that's definitely been a really small minority.' HP105, Psychologist, T2

At both the 6- and 12-month interviews, most interviewees across all groups were concerned and sometimes angry about vaccine hesitancy within their family or friends and in the wider community.

'I don't understand the anti-vaccination... that bewilders me.' FM 409, Parent, T1

'[patients] are enraged at all the people who aren't having it... and make it much more dangerous for them, a more dangerous situation from an infection point of view... there is one woman, her father refuses to be vaccinated and she said, "Dad, you can kill me!" And I think he still won't.' HP123, Social worker, T2

3.3 | Confusion and frustration

Across stakeholder groups at both timepoints, there was confusion and frustration related to the disorganized and delayed national vaccine rollout. Participants felt that additional waves and lockdowns could have been avoided if the rollout had been better handled. Interviewees also expressed frustration and confusion regarding how the media communication of the AstraZeneca vaccine and blood clots generated misinformed fear in the public. Patients/family were also confused

about vaccination priority groups (whether they were among them) and reported receiving conflicting advice from GPs and specialists about whether to have the vaccine.

'We are now suffering; we're going to suffer until people wake up to the fact that the national vaccination rollout has been woeful in the extreme... the whole country is in lockdown now because of the poor vaccination rate.' HP100, Medical Oncologist, T1

'There is so much misinformation! So much information and the government changed their mind every bloody second week on what is safe and what is not safe... you're feeding the anti-vaxxers... If they would just come out with one set of guidelines... and stick to it, I think they would have had a better uptake by now.' P310, Prostate, T2

'I honestly don't know what to do. I completely trust my GP 100%... but it's really difficult when I've got two separate specialists as well, sort of pushing for me to have [vaccine].' Patient326 Bowel/Lymphoma; T1

'Every time anybody has any kind of tiny reaction, the newspaper blows it up into a great big headline. And that doesn't help anything... I mean you can get blood clots from flu vaccinations, but they don't put that on the front page of the newspaper.' HP113, Nurse/Cancer care coordinator, T2

3.4 | Uncertainty

At the 6-month interviews, across stakeholder groups, interviewees experienced uncertainties related to cancer patient vaccine eligibility; how to access the vaccines; whether cancer patients are at increased risk of vaccine-related side effects; whether the vaccine is effective in cancer patients; if there are treatment implications or timing considerations; and whether the vaccine has long-term efficacy. Except for uncertainties related to access and eligibility, these uncertainties were still present at 12-month interviews.

'I know that the number of people that have had clotting events is very, very low. But then when you combine that with the increased risk of clotting from lung cancer... I just need someone to help me sort it out.' Patient319, Lung, T1

'There are some queries about... how to time with their cancer treatments... they don't want to delay their cancer treatment because of having the vaccination.' HP107, Psychologist, T1

'No-one knows one 100% the long-term impacts of the vaccine.' HP141, Nurse/Cancer care coordinator, T2

3.5 | Accessibility

Most interviewees experienced easy, streamlined access to the vaccine. HPs had access through their workplaces, and patients were called by GPs or proactively asked their GP/oncologist about vaccination. At 6 months, some patients/family noted their HPs exhibited a lack of urgency to have patients vaccinated, prioritizing the flu vaccine. However, none discussed this at the 12-month interviews.

'[Doctor] said get your flu vax. She said, that's more bloody important than COVID right now.' Patient310, Prostate, T1

Patients discussed a perceived lack of choice around which vaccine was accessible for them but were mostly willing to accept any vaccine.

'In the end I got the Pfizer, and I was happy about getting that, but I would have got the Astra... I'm just really excited to be vaccinated.' Patient333, Breast, T1

3.6 | Expert tailored advice

While some patients had no concerns about the vaccine and did not discuss vaccinations with their HPs, others wanted expert tailored advice. Patients considered oncologists, GPs, and other cancer patients as trusted sources of information on vaccinations. Allied HPs/NGOs referred patients to their specialists, and HPs/NGOs in general were referring to trusted resources, like Cancer Australia and ATAGI.

'I think having a supportive GP and an oncologist who is able to just to go through what are the concerns, because that is who they trust.' HP149, Medical oncologist, T1

'We just provide very general information and refer them to their treating specialist and their GPs as well. I do refer them to the Cancer Australia, they have an excellent FAQ page.' NGO124, Nurse/Cancer care coordinator, T1

'I said to my GP, who I've known for 30 years and trust, he couldn't see any issues that sort of conflict with the treatment that I was having and no not the slightest bit worried about the vaccinations.' Patient 311, Prostate, T2

Interviewees reported either receiving (patients/family) or providing (HPs/NGOs) pro vaccination advice at both timepoints. Health professionals had been given

TABLE 2 Information needs identified by stakeholder group

| Information needs | P | FM | HP | NGO |
|---|---|----|----|-----|
| How/where to access the vaccine? | X | X | X | X |
| Are cancer patients a priority for vaccination/when will they be eligible for vaccination? | X | | X | X |
| What is the risk of having the vaccine versus risk of getting COVID at an individual level? | X | | X | X |
| What is the risk of side effects (especially blood clots as a cancer patient)? | X | X | X | X |
| What are the experiences of my peers with vaccine? Wait till confirmed safe... | X | X | | X |
| How will a weakened immune system respond to the vaccine? | | | X | X |
| How effective is the vaccine for cancer patients? | X | | X | |
| When in treatment cycle to get vaccinated/will it delay treatment/how long will I need to wait after treatment? | X | | X | X |
| What sort of long-term/different mutation protection will the vaccine provide? | X | | X | |
| Will cancer patients need a vaccination to access support programs? | | | | X |

Abbreviations: FM, family member; HP, health professional; NGO, nongovernment organization; P, patient.

a directive to be evidence-based and pro vaccination and felt confident talking to patients about vaccines.

'We've actually been advised that we all have responsibility as health professionals to be able to promote the idea that vaccination generally is a very good idea.'
HP101, Psychologist, T1

The information needs identified in the interviews included accessibility and eligibility, risks, effectiveness and timing of the vaccine, and long-term implications of the vaccine (Table 2).

4 | DISCUSSION

This is the first study to look at attitudes toward COVID-19 vaccination from multiple cancer stakeholder perspectives over time. Like recent international studies, we found that most cancer patients intended to be or were vaccinated.¹⁶⁻³⁰ Our research also found that additional cancer stakeholder groups, such as family members, HPs, and NGOs, all expressed pro COVID-19 vaccination attitudes and behaviors.

All stakeholder groups reported barriers to COVID-19 vaccination uptake in this population, supporting the previous research. Barriers included lack of confidence in science and vaccine efficacy,^{16,19,21,23,24} fear of side effects,^{16,21-26,30} belief that COVID-19 is benign,^{16,23,25} and concern about vaccine impact on treatment.^{18,22,26} Notably, most hesitation related to the lack of information about vaccine efficacy and impacts within the cancer context, rather than general antivaccination sentiment. Thus, as recommended elsewhere,³⁴ a respectful, evidence-based approach by all HPs involved in the medical care of cancer patients/family (including oncologists) to communicating about vaccination is likely to be most effective in promoting uptake. Communication, which clarifies beliefs and values, promotes the benefits of vaccination while acknowledging risks and unknowns, corrects misinformation, and keeps communication channels open, is most likely to

be effective. Additionally, Kelkar and colleagues suggest that the communication of vaccine information using positive framing can increase vaccine enthusiasm in cancer patients.³⁵

A variety of information needs were identified by cancer stakeholders that if addressed could facilitate vaccine uptake. Clear and consistent information on how and where to access vaccinations, as well as specific information on priority groups, would have facilitated the vaccination rollout and uptake in cancer patients in Australia, supporting the need for tailored messaging for specific vulnerable groups.³⁶ Similarly, cancer-specific education and communication about the risks associated with COVID versus risk of side effects from COVID vaccines from trusted sources may have alleviated uncertainties or concerns around vaccination. Our findings support recent international research, which also found that breast cancer patients sought information about vaccines from their oncologists³⁷ and that HPs can assist in the decision making related to COVID-19 vaccines.²⁰ To support this, once vaccines have been proven to be safe and effective in the general population, clinical trials should focus on vulnerable population groups, such as those with compromised immune systems. Research is currently underway in Australia to investigate the safety and efficacy of COVID-19 vaccines in cancer patients, the results of which will inform tailored messaging for cancer patients regarding COVID-19 vaccination.³⁸

Further, research^{35,39} indicates that education interventions, such as webinars delivered by experts (oncology and disease specialists), can impact patient perspectives regarding COVID-19 vaccine safety and effectiveness, as well as shift intentions toward vaccination. Potter and colleagues³⁷ suggest that government agencies and healthcare organizations can also play an important role in media and education campaigns to provide evidence-based information and prevent the spread of misinformation.

In addition to information and communication needs, this research highlighted stakeholder confusion and frustration with the national COVID-19 vaccine rollout. The COVID-19 vaccine rollout in Australia was delayed due to slow and inadequate supply of vaccines to Australia and inefficient distribution networks within Australia.⁴⁰

Strategies to improve vaccine rollouts include purchase of sufficient supply of vaccine, use of information technology to facilitate vaccination appointments and use of residual vaccines, incentives for vaccinated individuals, vaccine awareness campaigns, and adaption of clinical and research systems to administer vaccines.⁴¹

4.1 | Implications for practice or recommendations

Building on the previous research, the findings reported here suggest that HPs, nongovernment cancer organizations, and government organization all have a role to play in communicating and educating cancer patients about vaccine safety and effectiveness to facilitate vaccine uptake among cancer patients. Communication and education campaigns should be delivered by trusted experts,^{35,37,39} clarify beliefs and values, promote the benefits of vaccination while acknowledging risks and unknowns, correct misinformation,^{34,37} and use positive framing.³⁵

4.2 | Limitations

Limitations of this research include sample bias; interviewees who chose to participate in this substudy may have had more favorable attitudes toward vaccination, and thus their perspectives may not be representative of the broader cancer stakeholder community. However, triangulation through inclusion of multiple stakeholder groups may have in part compensated for this issue. Similarly, our sample was mostly female and highly educated, which may also bias the results. Future research specifically targeting men and those with more diverse demographic characteristics would provide additional insights. Finally, quantitative research with a large, diverse sample is needed to assess the generalizability of these qualitative results.

5 | CONCLUSION

To decide to have a vaccine, individuals need to know how to access vaccines, as well as understand the risks and benefits of vaccines. Trusted sources, such as nongovernment cancer organizations, government agencies, and HPs, have a key role to play in providing information and education to address the information needs identified through this research. This research could be used to inform government policy related to vaccine rollouts in the future.

ACKNOWLEDGMENTS

The Psycho-Oncology Co-operative Research Group is funded by Cancer Australia through their Support for Clinical Trials Funding Scheme.

The COVID-19 Cancer Stakeholder Authorship Group includes Ilona Juraskova, Laura Kirsten, Haryana Dhillon, Louise Sharpe, Lisa Beatty, Brian Kelly, Philip Beale, Maria Cigolini, Raymond J Chan, and Megan Best.

This research was supported by Register4, Prostate Cancer Foundation of Australia, and Australian Lung Foundation through its members'

participation in research; and CNSA, COSA, MOGA, and Psychologists in Oncology advertised the study to their members.

Open access publishing facilitated by The University of Sydney, as part of the Wiley - The University of Sydney agreement via the Council of Australian University Librarians.

DISCLOSURE

The authors have no relevant financial or nonfinancial interests to disclose.

CONFLICT OF INTEREST

The authors have no conflict of interest.

ETHICS APPROVAL STATEMENT

This research was approved by the University of Sydney Human Research Ethics Committee (HREC) and Sydney Local Health District HREC (2020/351 and 2020/ETH01184, respectively).

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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REFERENCES

1. World Health Organization. WHO Coronavirus (COVID-19) Dashboard. 2021. Available from: <https://covid19.who.int/>. Accessed December 13, 2021.
2. Australian Government Department of Health. *Coronavirus (COVID-19) Case Numbers and Statistics*. Australian Government; 2021.
3. Australian Bureau of Statistics. COVID-19 Mortality. Australian Bureau of Statistics; 2020.
4. Liu B, Jayasundara D, Pye V, et al. Whole of population-based cohort study of recovery time from COVID-19 in New South Wales Australia. *Lancet Reg Health West Pac*. 2021;12:100193. <https://doi.org/10.1016/j.lanwpc.2021.100193>
5. Folegatti PM, Ewer KJ, Aley PK, et al. Safety and immunogenicity of the ChAdOx1 nCoV-19 vaccine against SARS-CoV-2: a preliminary report of a phase 1/2, single-blind, randomised controlled trial. *Lancet*. 2020;396(10249):467-478.
6. Ramasamy MN, Minassian AM, Ewer KJ, et al. Safety and immunogenicity of ChAdOx1 nCoV-19 vaccine administered in a prime-boost regimen in young and old adults (COV002): a single-blind, randomised, controlled, phase 2/3 trial. *Lancet*. 2021;396(10267):1979-1993.
7. Polack FP, Thomas SJ, Kitchin N, et al. Safety and efficacy of the BNT162b2 mRNA covid-19 vaccine. *N Engl J Med*. 2020;383(27):2603-2015.
8. Medical Oncology Group of Australia. COVID-19 Vaccination in Patients with Solid Tumours. Medical Oncology Group of Australia; 2021.
9. Australian Technical Advisory Group on Immunization. Provider Guide to COVID-19 Vaccination of People with Immunocompromise. Australian Government, Department of Health; 2021.

10. National Comprehensive Cancer Network. Cancer and COVID-19 Vaccination. National Comprehensive Cancer Network; 2021.
11. European Society for Medical Oncology. COVID-19 Vaccination in Patients with Cancer: ESMO Releases Ten Statements. European Society for Medical Oncology; 2020.
12. COVID-19 Vaccine Rollout on Track to Begin 22 February [Press Release]. Australian Government Department of Health; 2021.
13. Phase 1B COVID-19 Vaccination Rollout Begins [Press Release]. Australian Government Department of Health; 2021.
14. Australian Government Department of Health. COVID-19 Vaccine Rollout Update. Australian Government Department of Health; 2021.
15. Australian Government Department of Health. COVID-19 Vaccination Daily Rollout Update. Australian Government Department of Health. 2021.
16. Barrière J, Gal J, Hoch B, et al. Acceptance of SARS-CoV-2 vaccination among French patients with cancer: a cross-sectional survey. *Ann Oncol*. 2021;32(5):673-674.
17. Brodziak A, Sigorski D, Osmola M, et al. Attitudes of patients with cancer towards vaccinations—results of online survey with special focus on the vaccination against COVID-19. *Vaccines (Basel)*. 2021;9(5):411.
18. Mejri N, Berrazega Y, Ouertani E, et al. Understanding COVID-19 vaccine hesitancy and resistance: another challenge in cancer patients. *Support Care Cancer*. 2022;30(1):289-293. <https://doi.org/10.1007/s00520-021-06419-y>
19. Cherif I, Khiari H, M'ghirbi F, Mallekh R, Mezlini A, Hsairi M. COVID-19 vaccine hesitancy among Tunisian cancer patients in the Salah Azaeiz Institute of Cancer. *Eur J Public Health*. 2021;31(3):ckab165.056. <https://doi.org/10.1093/eurpub/ckab165.056>
20. Chun JY, Kim SI, Park EY, et al. Cancer patients' willingness to take COVID-19 vaccination: a nationwide multicenter survey in Korea. *Cancers*. 2021;13(15):3883. <https://doi.org/10.3390/cancers13153883>
21. Conti R, Akesson J, Weiss E, et al. COVID-19 Vaccine Hesitancy Among Blood Cancer Patients. 2021.
22. Di Noia V, Renna D, Barberi V, et al. The first report on coronavirus disease 2019 (COVID-19) vaccine refusal by patients with solid cancer in Italy: early data from a single-institute survey. *Eur J Cancer*. 2021;153:260-264.
23. Figueiredo JC, Ihenacho U, Merin NM, et al. SARS-CoV-2 vaccine uptake, perspectives, and adverse reactions following vaccination in patients with cancer undergoing treatment. *Ann Oncol*. 2022;33(1):109-111.
24. Kufel-Grabowska J, Bartoszkiwicz M, Ramlau R, Litwiniuk M. Cancer patients and internal medicine patients attitude towards COVID-19 vaccination in Poland. *Adv Clin Exp Med*. 2021;30(8):805-811.
25. Mullally WJ, Flynn C, Carr P, et al. 1595P Acceptance of COVID-19 vaccination among cancer patients in an Irish cancer centre. *Ann Oncol*. 2021;32:S1144-S1145.
26. Noronha V, Abraham G, Bondili S, et al. COVID-19 vaccine uptake and vaccine hesitancy in Indian patients with cancer: a questionnaire-based survey. *Cancer Res Stat Treat*. 2021;4(2):211-218.
27. Tsai R, Hervey J, Hoffman K, et al. COVID-19 vaccine hesitancy and acceptance among individuals with cancer, autoimmune diseases, and other serious comorbid conditions: a cross-sectional internet-based survey. *JMIR Public Health Surveill*. 2021;8(1):e29872.
28. Villarreal-Garza C, Vaca-Cartagena BF, Becerril-Gaitan A, et al. Attitudes and factors associated with COVID-19 vaccine hesitancy among patients with breast cancer. *JAMA Oncol*. 2021;7(8):1242-1244.
29. Waters AR, Kepka D, Ramsay JM, et al. COVID-19 vaccine hesitancy among adolescent and young adult cancer survivors. *JNCI Cancer Spectrum*. 2021;5(3):Pkab049.
30. Roupa Z, Noula M, Nikitara M, Ghobrial S, Latzourakis E, Polychronis G. Acceptance of coronavirus disease 2019 vaccination by cancer patients in Cyprus: a cross-sectional study. *J Oncol Pharm Pract*. 2021.
31. Saunders B, Sim J, Kingstone T, et al. Saturation in qualitative research: exploring its conceptualization and operationalization. *Qual Quant*. 2018;52(4):1893-1907.
32. Gale NK, Heath G, Cameron E, Rashid S, Redwood S. Using the framework method for the analysis of qualitative data in multi-disciplinary health research. *BMC Med Res Method*. 2013;13(1):117.
33. Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *Int J Qual Health Care*. 2007;19(6):349-357.
34. Leask J, Carlson SJ, Attwell K, et al. Communicating with patients and the public about COVID-19 vaccine safety: recommendations from the Collaboration on Social Science and Immunisation. *Med J Aust*. 2021;215(1):9-12.
35. Kelkar AH, Blake JA, Cherabuddi K, Cornett H, McKee BL, Cogle CR. Vaccine enthusiasm and hesitancy in cancer patients and the impact of a webinar. *Healthcare*. 2021;9(3):351.
36. Centers for Disease Control and Prevention. How to Tailor COVID-19 Information to Your Audience. 2021. Available from: <https://www.cdc.gov/vaccines/covid-19/hcp/tailoring-information.html>. Accessed December 13, 2021.
37. Potter DA, Thomas A, Rugo HS. A neoadjuvant chemotherapy trial for early breast cancer is impacted by COVID-19: addressing vaccination and cancer trials through education, equity, and outcomes. *Clin Cancer Res*. 2021;27(16):4486.
38. Australian New Zealand Clinical Trials Registry. SARS CoV-2 Post COVID-19 Vaccine Surveillance Studies in Australian Children and Adults with Cancer. 2021. Available from: <https://www.anzctr.org.au/TrialSearch.aspx#&conditionCode=&dateOfRegistrationFrom=&interventionDescription=&interventionCodeOperator=OR&primarySponsorType=&gender=&distance=&postcode=&pageSize=20&ageGroup=&recruitmentCountryOperator=OR&recruitmentRegion=ðicsReview=&countryOfRecruitment=®istry=&searchTxt=SerOzNET&studyType=&allocationToIntervention=&dateOfRegistrationTo=&recruitmentStatus=&interventionCode=&healthCondition=&healthyVolunteers=&page=1&conditionCategory=&fundingSource=&trialStartDateTo=&trialStartDateFrom=&phase=>. Accessed March 28, 2022.
39. Villarreal-Garza C, Vaca-Cartagena BF, Becerril-Gaitan A, Castilleja-Leal F. Letter to Editor, Re: the first report on Covid-19 vaccine refusal by cancer patients in Italy: early data from a single-institute survey: educational webinar about COVID-19 vaccines in oncological patients: a promising strategy to tackle COVID-19 vaccine hesitancy. *Eur J Cancer*. 2021;158:189-190.
40. Stobart A, Duckett S. Australia's response to COVID-19. *Health Econ Policy Law*. 2022;17(1):95-106.
41. Turner D, Woloszko N, Chaux T, Dek M. Understanding Differences in Vaccination Uptake among OECD Countries. 2022.

SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

How to cite this article: Bartley N, Havard P, Butow P, Shaw J; COVID-19 Cancer Stakeholder Authorship Group. Experiences and perspectives of cancer stakeholders regarding COVID-19 vaccination. *Asia-Pac J Clin Oncol*. 2022;1-9. <https://doi.org/10.1111/ajco.13808>