Why is influenza vaccine uptake so low among Aboriginal adults?

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Abstract

Objectives: Determine major barriers to, and facilitators of, influenza vaccination of Aboriginal adults, in order to improve coverage from the current level of 30%.

Methods: i) A focus group with 13 Aboriginal Immunisation Healthcare Workers; and ii) a cross-sectional survey of Aboriginal people aged ≥18 years at the 2017 New South Wales Koori Knockout (29 September–2 October).

Results: The focus group nominated poor identification of Aboriginality in general practice. Of 273 survey respondents, a substantial minority (30%) were unaware of their eligibility for free influenza vaccination. More than half (52%) believed the vaccine could cause influenza, 40% reported there were better ways than vaccination for avoiding infection and 30% said they would not have the vaccine if it was offered to them. Regarding health service access, few reported experiencing difficulty (17%), feeling uncomfortable (15%) or being discriminated against (8%), but 53% reported not receiving a reminder from a health professional.

Conclusions: Misconceptions about influenza disease and vaccine among Aboriginal people and inadequate identification of Aboriginality in general practice appear to be the greatest barriers to vaccination, rather than health service access in general.

Implications for public health: More active communication to and targeting of Aboriginal adults is required; this is even more urgent following the arrival of COVID-19.

Key words: Oceanic Ancestry Group, adult, immunisation programs, health knowledge, attitudes, practice

The influenza virus is responsible for a substantial disease burden, estimated to kill more than 3,000 Australians annually.[1] However, the burden is much greater in Australia's First Peoples, with influenza hospitalisation rates five-fold higher[2] than those of non-Indigenous people, probably due to their higher rates of chronic disease.[2] Therefore, those classified as 'at risk' of severe outcomes from influenza infection – who are eligible for free annual influenza vaccine – include all Australia's First Peoples people aged ≥6 months, as well as non-Indigenous people with underlying medical conditions or aged ≥65 years.[3] However, uptake is low among Australia's First Peoples, with the most recent influenza vaccine coverage estimate in 2013 being only 29% for people aged 18–49 years and 51% in 50–64-year-olds, with little change since the vaccine became free of charge for younger adults in 2010.[4]

Common barriers in the general population to vaccine uptake include cost and other factors related to healthcare access, knowledge and awareness, and attitudes to a specific vaccine or vaccination in general.[5,6] It is estimated that one-third of Australia's First Peoples people feel discriminated against in a healthcare setting,[7] so a lack of cultural safety for them may be another key barrier.

While there are several studies that examine barriers to vaccination and strategies for improvement in the general Australian population,[26] and two on pregnant First Nations women, no studies were identified that specifically targeted all Australia's First Nations adults. Therefore, the aims of this project were to investigate the awareness and attitudes of Aboriginal adults towards the influenza vaccine and accessibility to it and to identify possible ways to improve influenza vaccination coverage.

Methods

The study consisted of two phases and used a multi-methods approach – a focus group of Aboriginal Immunisation Healthcare Workers (AIHCWs) and a survey of Aboriginal community members.

Phase 1: Aboriginal Immunisation Healthcare Worker focus group

Since 2013, AIHCWs have been employed in each local health district in New South Wales (NSW), based at the Public Health Unit.[11] Their role is to facilitate immunisation of Aboriginal people through working with community groups and providers and providing direct follow-up of parents of under-vaccinated Aboriginal children. A focus group was held with all 13 AIHCWs at their annual workshop at the NSW Ministry of Health in North Sydney (18 August 2017). A discussion guide

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was developed to explore the attitudes of staff towards the provision of Aboriginal adult immunisation, the barriers that they believe are impacting on uptake and the potential strategies that could be used to improve uptake. Questions were asked in an open-ended manner to allow room for expansion. Paraphrasing and additional questions/prompts were added to seek clarification during the sessions.

Data analysis

Interviews were digitally recorded and transcribed verbatim. We used NVIVO 11 for coding and management of the data. The data were thematically analysed using an inductive approach.[12] To analyse the data, we followed the steps proposed by Braun and Clarke,[13] comprising familiarisation by reading and re-reading during transcribing verbatim, generating initial codes and themes, and reviewing, defining and naming themes that were most relevant to the research questions.

Phase 2: Community survey

The NSW Koori Knockout is a NSW-wide Aboriginal Rugby League Tournament held each year over the October long weekend. It is one of the largest gatherings of Australia's First Peoples population, with more than 35,000 attending in 2016.[8] A survey was conducted via a self-administered questionnaire of attendees at the 2017 event held from Friday 29 September to Monday 2 October at Leichardt Oval in Sydney.

Sample size

A sample size of 320 participants was required in order to detect a significant difference in the proportions of barriers reported between vaccinated and unvaccinated participants, assuming coverage for young and middle-aged adults was at approximately 30%, with alpha=0.05 and power of 80%.[9]

Questionnaire

The questionnaire was developed by the study authors based on a combination of questions selected from the Adult Vaccination Survey[27] and barriers and facilitators for Aboriginal and Torres Strait Islander people of healthcare access that were identified in the literature. The questionnaire was reviewed by the Reference Group and AIHCWs. Before the survey formally commenced, it was piloted at the Koori Knockout on the first morning. The questionnaire consisted of 15 questions on demographics, healthcare use, knowledge and attitudes to adult vaccination and vaccination status. Most questions were structured as 'tick all that apply' answers with the additional option of free text (Tables 1 and 2), plus a series of questions on attitudes with a five-point Likert scale for responses (Table 3).

Data collection

A total of 10 interviewers were responsible for approaching prospective participants, obtaining consent, providing the paper questionnaire and collecting it when completed. Interviewers were required to be Aboriginal, as recommended by the Reference Group, and were predominantly Aboriginal Health Workers from various parts of NSW. They circulated in pairs or groups around the three different grounds where the games were being played and approached people in attendance to undertake the survey. Only people who were Aboriginal and over 18 years of age were surveyed.

Data analysis

Univariate and multivariate statistical analyses were conducted using SPSS 22.0 for Windows.[10] As the questionnaire included only categorical data, the chi-squared test for proportions was used, with an α-level set at 0.05 or less for significance. All survey questions were compared based on whether individuals were vaccinated (or not). Stepwise multivariate logistic regression was conducted to determine which factors were associated with vaccination.

Ethical approval, governance and terminology

Ethics approval was obtained from the Aboriginal Health and Medical Research Council. A Reference Group was convened to advise on all aspects of the study. Members were: one representative of NSW's Office of Health Protection, three AIHCWs, two Aboriginal Medical Students (UNSW) and the National Indigenous Immunisation Coordinator, and it was chaired by co-author TJ, an Aboriginal researcher. While our first preference was for the Chair to be external, this was not possible as no external members accepted nomination. We use the term 'Aboriginal' when referring to the First People of NSW and 'Australia's First Peoples' when referring to all of Australia.

Results

Phase 1: Aboriginal Immunisation Healthcare Worker focus group

All 13 AIHCWs agreed to participate in the focus group. There were three main themes identified by participants.

Identification of patient Aboriginality

It was suggested that identification of Aboriginal patients was a huge problem in areas where an Aboriginal Medical Service is not available. It was reported that most general practices do not know how many Aboriginal patients they have, and this becomes an issue when deciding who to offer certain vaccines to. One participant stated: "it's very important to educate and empower Aboriginal community members to not be ashamed of who they are and that it's for their own health benefit if they identify; they're not getting into trouble, as this is a common misconception when it comes to identification". There was a consensus among the participants that more education was necessary (including of clinic staff) on the importance of determining patient Aboriginality.

A peripheral part of the National Immunisation Program

It was emphasised that if the eligibility of all Aboriginal adults was more prominent in promotions of the national schedule, doctors would see them as an important group and more actively promote vaccination. Currently, it is considered an additional vaccine at the bottom of the schedule, and perhaps as one participant suggested: "the [visual presentation of the] schedule needs to be changed for them, but I also think the schedule needs to have it in there as compulsory".

Improve community awareness

Participants voiced concerns that there is a lack of education among some community members. For instance, there are community members who are on bush medicine, and many of them do not know what the vaccinations are for and what protection they provide. Brochures and posters were all suggestions mentioned by the participants to increase awareness about vaccines, as well as the need for more localised resources that break away from the use of sporting identities and instead use real-life people (e.g. elders) that the community can identify with. Having

the same consistent information accessible to everyone was also seen as key, as this would allow for the development of 'a common yarn' regarding the influenza and pneumococcal vaccines.

Phase 2: Community survey

A total of 273 community members completed the survey. The response rate is not known, it was not possible to collect data on people who did not consent to participate due to the outdoor nature of the setting. Compared to the NSW Aboriginal adult population, the survey sample had an over-representation of females (61.5% vs. 50.4%, $p<0.001$), people from urban areas (46.5% vs. 34.8%, $p<0.001$), those with higher levels of education (tertiary 19.8% vs. 6.5%, $p<0.001$) and people in employment (65.6% vs. 44.1%, $p<0.001$); more detail is provided in Supplementary File 1.

Of survey participants, 38.5% reported receiving an influenza vaccine in 2017. In univariate analysis, receipt of influenza vaccine was significantly associated with older age, lower levels of education, being retired and not being a student. There was no association with gender or area of residency (Table 1).

Awareness

Most participants reported being aware of their eligibility for a free influenza vaccination (70%, Table 2), although the rate was slightly lower in the younger age group (66%), which had the most participants. More than half had been told by a doctor to be vaccinated and almost half had received a reminder from a health professional. However, a substantial minority had not received this advice from anyone. While 60% had seen some promotional material about influenza vaccination, most had not seen any material directed at Aboriginal people.

Being vaccinated was associated with being aware of one's eligibility, having been told by a doctor to be vaccinated, and having received a reminder from a health professional or remembered promotions for influenza vaccination of Aboriginal people in the media (Table 2).

Attitudes

Almost half of participants did not think that the vaccine was very effective, a majority believed that the vaccine can cause influenza, and substantial proportions believed that

Table 1: Demographic characteristics of survey sample, by influenza vaccination status.

	Total n(%)	Vaccinated n(%)	Unvaccinated n(%)	*p*-value[a]
Gender				
Male	105 (38.5)	42 (40.0)	63 (37.5)	0.597
Female	168 (61.5)	63 (60.0)	105 (62.5)	
Age group (years)				
18-44	186 (68.1)	60 (57.1)	126 (75.0)	0.000
45-64	74 (27.1)	38 (36.3)	36 (21.4)	
≥65	13 (4.8)	7 (6.7)	6 (3.6)	
Area of residency				
Urban	127 (46.5)	44 (41.9)	83 (49.4)	0.105
Regional	118 (43.2)	47 (44.8)	71 (42.3)	
Remote	28 (10.3)	14 (13.3)	14 (8.3)	
Education level				
No education	25 (9.2)	14 (13.3)	11 (6.5)	0.001
Year 10/ TAFE	134 (49.1)	58 (55.2)	76 (45.2)	
Year 12 cert	60 (22.0)	17 (16.2)	43 (25.6)	
University degree	54 (19.8)	16 (15.2)	38 (22.6)	
Employment status				
Employed	179 (65.6)	66 (62.9)	113 (67.3)	0.002
Out of work	56 (20.5)	24 (22.9)	32 (19.0)	
Student	20 (7.3)	4 (3.8)	16 (9.5)	
Retired	18 (6.6)	11 (10.5)	7 (4.2)	
Total	273 (100)	105 (100)	168 (100)	

Note:
a: Chi-squared test comparing distribution in vaccination and unvaccinated.

Table 2: Participants' awareness of influenza vaccination, by vaccination status.

	Total n(%)	Vaccinated n(%)	Unvaccinated n(%)	*p*-value*
Aware of eligibility for free influenza vaccination	192 (70.3)	84 (80.0)	108 (64.3)	0.001
Told to get the flu vaccine by a Doctor	159 (58.2)	71 (67.6)	88 (52.4)	0.002
Not told to get flu vaccine by anyone	57 (20.9)	14 (13.3)	43 (25.6)	0.004
Seen something about flu vaccine for Aboriginal people in the news	106 (38.8)	50 (47.6)	56 (33.3)	0.002
Seen posters about flu vaccine for Aboriginal people	118 (43.2)	52 (49.5)	66 (39.3)	0.032
Seen posters about flu vaccine in general	163 (59.7)	65 (61.9)	98 (58.3)	0.458
Not seen anything about flu vaccination	81 (29.7)	21 (20.0)	60 (35.7)	0.001
Received a reminder from a health professional to get immunised	127 (46.5)	61 (58.1)	66 (39.3)	0.000
Total	273 (100)	105 (100)	168 (100)	

Note:
a: Chi-squared test comparing distribution in vaccination and unvaccinated.

Table 3: Participants' risk perceptions and attitudes towards influenza, by vaccination status (agree or strongly agree to the statement).

	Total n(%)	Vaccinated n(%)	Unvaccinated n(%)	*p*-value[a]
Hardly ever get the flu	181 (66.3)	62 (59.5)	119 (70.8)	0.008
The flu is not that serious for most healthy people	95 (34.8)	36 (34.3)	59 (35.1)	0.858
The flu vaccine can cause the flu	143 (52.4)	46 (43.8)	97 (57.7)	0.004
There are better ways to avoid the flu than a vaccine	105 (38.5)	31 (29.5)	74 (44.0)	0.003
People should develop immunity naturally rather than getting the flu vaccine	117 (42.9)	43 (41.0)	74 (44.0)	0.523
Only worried about the flu if hear it's been bad	132 (48.4)	44 (41.9)	88 (52.4)	0.032
The flu vaccine is very effective	160 (58.6)	83 (79.0)	77 (45.8)	0.000
Would have the flu vaccine if I was offered	187 (68.5)	89 (84.8)	98 (58.3)	0.000

Note:
a: Chi-squared test comparing distribution in vaccination and unvaccinated

influenza is not a serious disease and that natural immunity or other non-vaccine methods of protection were better. Thirty-one per cent of respondents did not indicate that they would be vaccinated if it was offered (Table 3). Younger adults were more likely to report that influenza is not a serious disease (37%, 18–44 years, p=0.01) and that there were better alternatives to the vaccine for preventing influenza (41%, 18–44 years, p=0.02). Most survey participants (66%) reported they hardly ever got the flu (Table 3).

Vaccinated participants were more likely to report that the vaccine is very effective, while unvaccinated participants more frequently reported that they hardly ever got influenza and that the vaccine can cause influenza.

Access

Most (83%) could easily access an influenza vaccination service, and there was no association between participants who reported they could easily access primary healthcare and vaccination status (p=0.50). Feeling uncomfortable, unsafe and/or discriminated against in a healthcare setting was reported by 17% (31), while 8% reported difficulty getting to a doctor. Participants who had difficulty getting to a doctor were significantly more likely to report being unvaccinated (p=0.03), but those who reported feeling unsafe or discriminated against did not have any difference in vaccination status (p=0.74).

Multivariate analysis

All variables found to be associated with vaccination status in univariate analysis were tested in a multivariate logistic regression model. Variables that remained significantly associated with being vaccinated were older age (OR 1.2, p=0.049), being told by a doctor to be vaccinated (OR 1.75, p=0.042), knowledge of eligibility for the free vaccine (OR 2.04, p=0.021), and lower educational attainment (OR 0.8 p=0.048).

Discussion

In this study, we have identified several areas to focus on to improve influenza vaccine coverage in Aboriginal adults. Of our community survey participants, 30% were unaware of their eligibility for a free vaccination, most did not recall seeing promotional material directed at Aboriginal people and most had not received a reminder to be vaccinated. There were widespread misconceptions, including a majority of participants believing that the influenza vaccine may cause influenza infection. Access to a vaccination provider was rarely a barrier. AIHCWs expressed concern that Aboriginal patients were often not identified as such in the primary healthcare setting, and therefore would not be offered vaccines that are free for Aboriginal people, and that it was not seen as a high priority by the healthcare system.

Our finding of lower coverage among the more educated is in contrast to studies of the Canadian elderly[6] and US adults,[5] which found some degree of higher coverage among this group, although cost barriers were an important barrier in the latter study. Our results are more consistent with studies showing that children of more highly educated parents are less likely to be vaccinated, due to them questioning the risks and benefits of vaccines.[14]

Knowledge of a participant's eligibility for free vaccination was significantly associated with being vaccinated. Although most participants (70%) were aware of their eligibility, a large proportion of them were unvaccinated (56%). This is supported by other studies demonstrating that cost is not the only barrier to primary healthcare delivery to indigenous people.[15-17] While access is a barrier in some settings due to remoteness or cost[16] or the lack of culturally appropriate services,[17] this did not seem to be the case among our study population. Other barriers that may be relevant are simply finding the time,[15] which was frequently mentioned by our respondents, and the need for more active follow-up and a greater variety of delivery models.[17]

Aboriginal adults who were advised to be vaccinated by a doctor and who received an immunisation reminder were significantly more likely to be vaccinated. This finding is shown in other studies, where doctors have been shown as major influencers of vaccination.[18,19] Further substantiating this is the fact most participants (~70%) would have had the flu vaccine if they were offered it, although only 48% were vaccinated.

Participants who had been exposed to media specifically targeting Aboriginal people were significantly more likely to be vaccinated, and this was a view supported by focus group participants. Some attitudinal factors were significantly associated with vaccination. The belief that the influenza vaccine can cause influenza is a common misconception, but it was more common in our respondents (52%) than in other populations such as the US elderly (13%)[20] or US adults (43%). However, in our population these associations were correlated with age, level of education, being recommended by a doctor and/or knowledge of eligibility. This is consistent with other studies that show that misconceptions about the safety and effectiveness of the influenza vaccine and under-estimation of the risks from vaccine-preventable disease were more common among younger adults.[21] This aligns with studies that demonstrate improved targeting if populations are able to identify with the campaigns,[22,23] but this may involve a need to target particular age groups or demographic groups of Aboriginal adults. Providing tailored information about the effectiveness and safety of vaccination may improve attitudes towards vaccination,[24] but addressing these attitudes alone does not necessarily lead to improved vaccination coverage.[25]

Since this study was undertaken, a pandemic of COVID-19 has occurred, with groups at highest risk of serious outcomes that are very similar to those for influenza – the elderly and people with various chronic diseases and other medical conditions. Aboriginal and Torres Strait Islanders are also likely to be at high risk for COVID-19, given their high rates of chronic disease.[3] Therefore, the need for higher influenza vaccine coverage is now more urgent to make optimal use of prevention strategies at a time of increased hazard.

This study has some limitations. Firstly, this project did not reach the target of 320 participants so there is less power than anticipated when analysing results. While statistical significance was generated for most questions, for others this was not possible. Due to the survey setting, it was necessary to keep the questionnaire as short as possible; therefore some issues could not be covered (e.g. attitudes to immunisation in general, other adult vaccines). Most questions asked participants to tick all applicable responses, where boxes were not ticked, we have assumed this was a negative response, but in some cases, options may have simply been skipped. The survey sample was not randomly selected. It was more urbanised and highly educated than the NSW Aboriginal adult population. However, the use of Aboriginal interviewers, mostly healthcare workers, is a strength of the study, contributing to a higher response rate and potentially more frank answers.

Conclusions

This study has demonstrated widespread misconceptions about eligibility for the free influenza vaccine, vaccine effectiveness and safety among NSW Aboriginal adults. Younger adults and the more highly educated were less likely to be vaccinated.

Implications for public health

If vaccination coverage is to reach more acceptable levels, a more proactive vaccination campaign is required that targets common misconceptions, as well as routine identification of patient indigeneity and targeted vaccination in general practice. The need for action is now more urgent following the emergence of COVID-19.

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Supporting Information

Additional supporting information may be found in the online version of this article:

Supplementary File 1: Survey sample demographics vs. NSW Aboriginal population.