

Early childhood education staff are falling through a vaccination policy gap in New Zealand

Namrata Prasad, Nikki Turner, Sarah Alexander

ABSTRACT

The recent COVID-19 vaccine mandate among early childhood education (ECE) staff highlights the important role ECE staff have in the transmission of infectious diseases. However, there are no data on general vaccine uptake for this group in New Zealand. Additionally, the importance of ECE staff vaccination as a strategy to prevent illness has been rarely promoted in the past, and recommendations for other vaccinations in this group are lacking. Here we present a section of data accessed from an ECE-sector employment survey of more than 4,000 teaching staff, which inquired into the immunisation status of respondents. The data indicated that self-reported immunisation coverage for whooping cough, hepatitis A, and hepatitis B among ECE staff was approximately 50%. Self-reported immunisation status was higher for measles, mumps, rubella, and chickenpox in this group. The findings highlight the need for more comprehensive vaccination policy and research in ECE settings.

The Ministry of Education 2020 census count, for the last week of June 2020, showed that there were 190,348 children up to six years of age participating in early childhood education (ECE) in New Zealand, of whom approximately 18% were younger than two years of age.¹ Over the same period, there were 30,476 teaching staff in teacher-led education and care centres such as kindergartens, or working as visiting teachers in home-based care arrangements. (Note that given the Ministry of Education's definition of "teaching staff," home-based carers and adults working in Playcentre and Nga Kōhanga Reo were not included in this number).¹

Evidence from several international studies suggest that non-parental group care is associated with an increased risk of communicable disease transmission and disease among children.²⁻⁴ This is also the case in New Zealand, where the Growing Up in New Zealand longitudinal study found that being in ECE at both nine months and two years of age was independently associated with a 1.5–2.5-times greater risk of ear infections, chest infections and gastroin-

testinal illnesses.⁵ The study also found that, compared to children not attending ECE, attendees experienced an increased risk of hospitalisation due to ear, chest, or gastrointestinal infection.

It is not possible for adults working in ECE to effectively social distance and avoid close contact with children. As such, both children and adults are at risk of acquiring and transmitting communicable diseases in an ECE setting. Moreover, many children in ECE are too young to be fully protected against vaccine-preventable diseases.

To manage these risks, the Health (Immunisation) Regulations 1995 has required all ECE services to keep an immunisation register of attending children.⁶ This is to promote and encourage informed choice for childhood immunisation uptake and to enable quick identification of the immunisation status of children, so unimmunised children can be asked to stay at home in the event of an outbreak. In contrast, no such regulations exist for adults working in group care—except that, from January 2022, all ECE services will need to maintain a COVID-19 vaccination register and ensure

only vaccinated staff and support people have contact with children.⁷

Additionally, Regulation 57 of the Education (Early Childhood Services) Regulations 2008⁸ encourages ECE staff members to stay at home and seek medical advice when ill. However, no similar recommendation is made to staff regarding vaccination as a preventative strategy. Finally, although the New Zealand Immunisation Handbook⁹ (which provides clinical guidelines regarding vaccinations to health professionals) recommends that ECE staff be vaccinated against pertussis (whooping cough), polio, measles/mumps/rubella, varicella (chickenpox), hepatitis A, hepatitis B, and influenza (annually), we are not aware of any recommendations made directly to ECE staff to acquire these vaccines at the point of registration as a teacher and/or commencement of employment.

To our knowledge, there have been no previous investigations on vaccination coverage among ECE staff in New Zealand. In this paper, we present data on self-reported immunisation status from an ECE-sector survey.

Methods

Between late January and mid-February 2020, a survey of people employed by licensed ECE services in New Zealand was undertaken by The Office of Early Childhood Education (OECE).⁹ The purpose of the survey was to inform improvements within the sector by gaining information on a range of factors related to employment, wellbeing, and work environment. Teaching staff employed in any licensed ECE service, including those on sick or other leave, were surveyed. The sampling criteria therefore differed from the scope of the Ministry of Education annual census, which counts adults in teacher-led centres or home-based visiting teachers who have contact with children over a one-week period (June 22–28 for the 2020 census).

ECE staff were invited to participate in the survey via an email mailing list and social media channels. As respondents self-selected to participate, they were not necessarily representative of all those who have contact with children in services. Further details of the survey can be found on the OECE website.¹⁰

Respondents were asked to indicate whether they were vaccinated against several well-known, vaccine-preventable infectious diseases, including measles/mumps/rubella, whooping cough, hepatitis A, and hepatitis B. They were also asked whether they had vaccination or previous infection from chickenpox. No information was sought on the number of doses of a vaccine. Respondents could choose to answer each disease-specific question item by ticking the response choices of “Yes,” “No,” or “Don’t know,” or by leaving the response blank. Chi-squared tests were used to compare the age distribution of survey respondents to the Ministry of Education 2020 census data for ECE teaching staff and to assess significant differences in self-reported vaccination status by age.

Results

Respondent characteristics

The ECE-sector employment survey was completed by a total of 4,021 ECE teaching staff, who account for approximately 13% of the total New Zealand ECE workforce, based on the Ministry of Education’s 2020 census data.¹

Table 1 shows the age distribution of the ECE-sector employment survey respondents compared to the Ministry of Education’s census data. The ECE-sector employment survey respondents included fewer ECE staff from the youngest and oldest age groups.

Respondent responses on vaccination

Table 2 shows that around half of respondents believed they were immunised against whooping cough (48%), hepatitis A (45%) and hepatitis B (46%). A higher proportion of staff reported they were immunised against measles, mumps, and rubella (85%) and believed they had immunity against chickenpox (82%).

Twenty-one respondents (0.5%) chose not to answer the question. Of these, five commented that they objected to the question being asked, as they did not see it as relevant to their role as teachers:

- “What does this have to do with teaching?”
- “I don’t see this is a relevant question.”¹⁰

Table 1: Age of survey respondents compared to the Ministry of Education’s 2020 census data for adults teaching in teacher-led services.

	Survey respondents		Census data		p-value
	N	(%) of total*	N	(%) of total*	
25 years and under	264	(6.6)	3,519	(11.6)	<0.001
26–45 years	2,372	(59.0)	1,5620	(51.7)	<0.001
46–65 years	1,340	(33.3)	9,648	(31.9)	0.032
66 years and over	44	(1.1)	1,450	(4.8)	<0.001
Missing	50	-	14	-	

*Excludes missing.

Table 2: Self-reported immunisation status among ECE teaching staff.

	Yes		No		Don’t know		Total
	N	(%)	N	(%)	N	(%)	
Whooping cough (booster shot within the last 10 years)	1,878	(47.7)	1,267	(32.2)	791	(20.1)	3,936
Measles, mumps and rubella (MMR)	3,399	(85.1)	244	(6.1)	352	(8.8)	3,995
Hepatitis A	1,771	(45.1)	606	(15.4)	1,546	(39.4)	3,923
Hepatitis B	1,822	(46.4)	587	(15.0)	1,514	(38.6)	3,923
Chickenpox (vaccinated or had disease)	3,225	(81.5)	540	(13.6)	192	(4.9)	3,957

- “Why is this even relevant??!!!!”
- “None of your business.”
- “Why?”

Three of the remaining respondents who did not answer vaccination questions offered the following comments:

- “I don’t wish to answer.”
- “Prefer not to answer.”
- “Don’t wish to answer.”

There were differences in self-reported immunisation by age group. In general, younger ECE teaching staff were more likely to report immunisation against diseases than older staff (Table 3). Finally, we did not detect any differences in self-reported immunisation status by type of ECE service, such as between teaching staff in kindergartens and home-based visiting teachers.

Discussion and recommendations

The current survey provides useful insights into vaccination uptake among ECE staff. It also highlights key gaps in policy aimed at reducing the spread of vaccine-preventable diseases.

In this ECE-sector employment survey, only half of ECE staff reported vaccination for whooping cough (pertussis), hepatitis A, and hepatitis B. Self-reported immunisation status among ECE staff was higher for measles, mumps, rubella, and chickenpox. Additionally, we found self-reported vaccination to vary significantly by age, with younger ECE staff more likely to report being vaccinated compared to older aged staff. Finally, a small number of ECE teachers strongly disapproved of being asked about their immunisation status, as they considered this irrelevant to their work.

When comparing these survey findings to a similar study from Australia, we found self-reported vaccination uptake rates in Australia for whooping cough, hepatitis A, and hepatitis B to be considerably higher, at 75.3%, 73.4%, and 75.5% respectively.¹¹ Australia appears to have more advocacy and attention, and stronger recommendations for ECE staff vaccination, which may explain their higher reported vaccine uptake. The Australian Government National Health and Medical Research

Council has published guidelines, *Staying Healthy: preventing infectious diseases in early childhood education and care services*,¹² that emphasise that “all education and care service staff should be advised of the potential consequences if they refuse reasonable requests for immunisation.” Such consequences include only being able to work with children aged over 12 months old; having to take antibiotics during outbreaks of bacterial diseases; and being excluded from work during vaccine-preventable disease outbreaks. The guidelines also recommend that ECE employers develop staff immunisation policies, develop and maintain staff immunisation records, and provide staff with information on vaccine-preventable diseases through in-service training and written material.

The key strength of the ECE-sector employment survey presented in this paper is its large number of respondents. However, it also has limitations that warrant attention. Firstly, it was not designed to be representative of all adults that have contact with children in ECE: for example, it did not include service owners who may have contact with children; volunteers, including students-in-training; or teaching staff who work as independent contractors. An additional limitation of the ECE-sector employment survey was that it relied on self-reported vaccination status and was therefore susceptible to social desirability bias, misclassification and recall bias, particularly in older age groups. The survey was also susceptible to selection bias towards individuals more (or less) interested in vaccination. However, as the survey focused on many aspects of ECE employment and respondents’ experiences of working in ECE, respondents were unlikely to have chosen to do the survey solely based on their interest in vaccination.

Despite these limitations, findings from this paper can act as a starting point for future work. Given the scale and impact of the 2019 measles outbreak, as well as SARS-CoV-2 community transmission in New Zealand, which has led to a COVID-19 vaccine mandate among ECE staff, understanding and improving vaccination awareness and vaccine uptake for other important infectious diseases among ECE staff in New Zealand needs to be a health priority.

Table 3: Self-reported immunisation status among ECE teaching staff by age group.

	Yes		No		Don't know		Total	P-value
	N	(% of total)	N	(% of total)	N	(% of total)		
Whooping cough (booster shot within the last 10 years)								
25 years and under	164	(62.1)	35	(13.3)	65	(24.6)	264	Ref
26–45 years	1,211	(51.7)	672	(28.7)	460	(19.6)	2,343	0.001
46–65 years	480	(37.2)	548	(42.5)	261	(20.2)	1,289	<0.001
66 years and over	22	(56.4)	12	(30.8)	5	(12.8)	39	0.494
Measles, mumps, and rubella (MMR)								
25 years and under	235	(89.0)	11	(4.2)	18	(6.8)	264	Ref
26–45 years	2,102	(88.9)	97	(4.1)	165	(7.0)	2,364	0.962
46–65 years	1,029	(77.7)	132	(10.0)	163	(12.3)	1,324	<0.001
66 years and over	32	(76.2)	4	(9.5)	6	(14.3)	42	0.021
Hepatitis A								
25 years and under	169	(64.3)	13	(4.9)	81	(30.8)	263	Ref
26–45 years	1,140	(48.7)	226	(9.7)	975	(41.6)	2,341	<0.001
46–65 years	449	(35.1)	354	(27.7)	475	(37.2)	1,278	<0.001
66 years and over	12	(30.0)	13	(32.5)	15	(37.5)	40	<0.001
Hepatitis B								
25 years and under	170	(64.9)	14	(5.3)	78	(29.8)	262	Ref
26–45 years	1,182	(50.5)	221	(9.4)	939	(40.1)	2,342	<0.001
46–65 years	458	(35.8)	342	(26.7)	481	(37.5)	1,281	<0.001
66 years and over	11	(29.7)	10	(27.0)	16	(43.2)	37	<0.001
Chickenpox (vaccinated or had disease)								
25 years and under	229	(86.7)	19	(7.2)	16	(6.1)	264	Ref
26–45 years	1,947	(83.1)	304	(13.0)	91	(3.9)	2,342	0.1343
46–65 years	1,017	(77.6)	215	(16.4)	78	(6.0)	1,310	<0.001
66 years and over	31	(77.5)	2	(5.0)	7	(17.5)	40	0.122

Firstly, the Ministry of Education and Ministry of Health should engage in more dialogue with ECE staff regarding the importance of vaccination. Secondly, steps should be taken to address current gaps in vaccination policy. The Ministry of Education has recently embarked on a review of the Education (Early Childhood Services) Regulations 2008 and the Ministry of Education's licensing criteria that accompany the regulations, and it would be within the scope of its review to consider working with the Ministry of Health to draft a proposal to amend the Health (Immunisations) Regulations 1995 to require all ECE services to also keep an immunisation register for vaccine-preventable disease in addition to COVID-19 among staff. Such registers should improve outbreak responses in ECE settings and raise staff awareness of the importance of vaccination. Additionally, amendments to current occupational health guidelines for ECE employers to encourage staff vaccination and the safe

placement of unvaccinated staff should also be considered. Finally, more research into the attitudes towards and barriers to vaccination among those who work in ECE is needed. For example, to date there has been little work done to assess the impact of free on-site vaccination delivery on vaccine uptake among ECE staff, attending children and their families.

Conclusion

By not receiving the recommended vaccines, ECE staff are at risk of exposing themselves, children, and the wider community to a range of vaccine-preventable diseases. Data from a national ECE survey of teaching staff suggests that immunisation for common vaccine-preventable diseases among ECE staff is low. More research on the attitudes towards and barriers to vaccination in this group, in conjunction with policy that encourages and supports vaccination, is necessary.

Competing interests:

Nil.

Acknowledgements:

Mary Nowlen: Immunisation Advisory Centre, University of Auckland Uniservices.

Author information:

Namrata Prasad: Immunisation Advisory Centre, University of Auckland Uniservices.

Nikki Turner: Immunisation Advisory Centre, University of Auckland Uniservices; General Practice and Primary Care, University of Auckland.

Sarah Alexander: Office of Early Childhood Education.

Corresponding author:Dr Namrata Prasad, Research Fellow, Immunisation Advisory Centre,
University of Auckland Uniservices
namrata.prasad@auckland.ac.nz**URL:**www.nzma.org.nz/journal-articles/early-childhood-education-staff-are-falling-through-a-vaccination-policy-gap-in-new-zealand**REFERENCES**

1. Education Counts [Internet]. [cited 2021 Feb 23]. Statistics. Available from: <https://www.educationcounts.govt.nz/statistics>
2. The National Institute of Child Health and Human Development Early Child Care Research Network. Child Care and Common Communicable Illnesses Results from the National Institute of Child Health and Human Development Study of Early Child Care. *Arch Pediatr Adolesc Med.* 2001;155(4):481-8. doi: 10.1001/archpedi.155.4.481
3. Thacker SB, Addiss DG, Goodman RA, Holloway BR, et al. Infectious Diseases and Injuries in Child Day Care: Opportunities for Healthier Children. *JAMA.* 1992;268(13):1720-6. doi: 10.1001/jama.1992.03490130108039
4. Bell DM, Gleiber DW, Mercer AA, et al. Illness associated with child day care: a study of incidence and cost. *Am J of Public Health.* 1989;79(4):479-84.
5. Duncan S, Gerritsen S, D'Souza S, Stewart T, et al. Is participation in Early Childhood Education related to child health and development? [cited 2021 Jan 22]. New Zealand: Auckland University of Technology; 2019. Available from: <https://www.msdc.govt.nz/documents/about-msd-and-our-work/publications-resources/research/participation-in-ece/ece-participation-and-development.pdf>
6. Health (Immunisation) Regulations 1995. Available from: <https://www.legislation.govt.nz/regulation/public/1995/0304/latest/whole.html>
7. HipKins C. Mandatory vaccination for two workforces [cited 2021 Oct 12]. In: Beehive > Releases [Internet]. Available from: <https://www.beehive.govt.nz/release/mandatory-vaccination-two-workforces>
8. Education (Early Childhood Services) Regulations 2008. Available from: <https://www.legislation.govt.nz/regulation/public/2008/0204/latest/DLM1412501.html>
9. Ministry of Health [Internet]. Immunisation Handbook 2020 [cited 2021 Feb 22]. Available from: <https://www.health.govt.nz/our-work/immunisation-handbook-2020/4-immunisation-special-groups#4-6>
10. Office of Early Childhood Education Te Tari Mātauranga Kōhungahunga [Internet]. The ECE Sector Employment Survey [cited 2021 Oct 4]. Available from: <https://oece.nz/public/evidence/reports/ece-sector-employment-survey/>
11. Seale H, Dwyer S, Kabir A, Kaur R. Vaccination uptake among Australian early childhood education staff: assessing perceptions, behaviours and workplace practices. *BMC Infect Dis.* 2019;19(1):805.
12. Australian Government National Health and Medical Council. Staying healthy: preventing infectious diseases in early childhood education and care services. 5th ed. 2013. Available from: <https://www.nhmrc.gov.au/about-us/publications/staying-healthy-preventing-infectious-diseases-early-childhood-education-and-care-services>