

New Zealand's mental health crisis, He Ara Oranga and the future

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The term “mental health crisis” was originally defined as an emergency that poses a direct and immediate threat to an individual’s emotional well-being. The definition has been expanded to refer to problems in community mental health and in mental health services (MHS) as a whole. A mental health crisis has been widely used to describe the state of New Zealand’s mental health. For example, recent headlines include “New Zealand mental health crisis as Covid stretches a struggling system”¹ and “New Zealand mental health crisis has worsened under Labour, data shows,”² suggesting deteriorating mental health in the population and an overwhelmed health system.

This paper sets out to test the veracity of these headlines. First, we will present data on whether rates of mental distress and the use of services are increasing in New Zealand. Second, we will consider the mental health system’s response to evaluate whether it has been effective. Third, we will consider where the limited available resources could most effectively be used.

We conclude that New Zealand’s mental health planning is heading in the wrong direction by directing resources and thus services away from people with serious mental illness who are often affected by social exclusion and deprivation. The current government’s plans, yet to be implemented, will expand psychotherapy to the “middle class,” an approach labelled as the “Big Community.”³ Evidence from both the UK and Australia indicates that such initiatives might not reduce population distress in New Zealand, as intended. Instead of spending on programmes for moderate

psychological distress, we suggest that the limited resources available for mental health should be carefully targeted towards those with serious mental illness, using integrated services located in areas with the highest levels of deprivation, which is often determined by ethnic, cultural and historical factors.

Is there a mental health crisis?

Two major approaches have been used to measure mental health (or illness) in New Zealand. The first is to study service use. Publicly available MHS data lag behind the headlines about the ongoing impact of the COVID-19 pandemic. The latest data are from 2017/18 and published in 2021.⁴ The figures may not be directly comparable to previous reports due to increasing non-government organisations reporting, resulting in some inflation of numbers. Nevertheless, the figures are the most accurate guide available. They show that increasing numbers of New Zealanders have been accessing MHS over the past decade. In 2017/18, 181,924 patients were seen by mental health and addiction services. The rate of increase since 2008/9 in non-Māori is 47% (1,931.5 to 2,840 per 100,000) and in Māori it’s 26% (4,119.7 to 5,201.2 per 100,000), the latter from a higher base rate. Anecdotally, it appears that the rate of increase has continued to rise since these figures were published. There is also significant pressure and significantly increasing demand for acute mental health beds, despite increased service provision in primary care and the community.

The second approach to measure mental health is the use of population surveys. We are fortunate in New Zealand to have the NZ Health Survey, an annual health survey performed in a random general population and which includes measures of mental health. The measure most sensitive to change in psychological distress is assessed using the K10 scale. The survey publishes the percentage with a very high probability of depressive or anxiety disorder, that is, a K10 score of 12 or higher. This percentage has steadily grown from 4.5% in 2011/12 to 8.6% in 2017/18.⁵ However, the rates now appear to have stabilised at 7.4% in 2019/20. Rates of diagnosed mental disorder, such as major depression and anxiety, have also stabilised over the past four surveys following steady increases between 2011/12 and 2016/17. Rates of hazardous or heavy drinking have also been stable since they were first measured in 2015/16.

A further plausible measure of mental health is the suicide rate. The latest data from the Office of the Chief Coroner reported that 654 people had died by suicide in the year July 2019 to June 2020, which equates to 13 deaths/100,000, a decrease from both the 2017/18 (13.7 deaths/100,000) and 2018/19 (13.9 deaths/100,000) figures.⁶

We should also consider the World Happiness Report conducted by Gallup. In this report, New Zealand ranks highly on wellbeing, having come ninth out of 149 countries on overall happiness measures (average life evaluation) in 2020. This is similar to its ranking and overall score between 2017 and 2019, in which New Zealand ranked eighth.⁷

So, what has been happening to MHS funding? Like most high-income countries, spending has increased; in New Zealand, mental health funding rose from NZD 1.1 billion in 2008/09 to 1.4 billion in 2015/16. The number of psychiatrists and psychologists almost doubled from 2005 to 2015.⁸ More people are taking psychotropic medications than ever before. In 2015, PHARMAC data reported that 13.7% of New Zealanders have been dispensed antidepressants and 3.1% antipsychotics. Both rates have increased by more than 50% over the prior decade.⁹ However, over this same period, psychological distress was wors-

ening rather than improving. It seems that increasing resources was not accompanied by any evidence of improved mental health at a New Zealand-wide level. We can derive some comfort from the fact that most high-income countries report similar findings. A recent review by Jorm et al¹⁰ noted that the prevalence of mood and anxiety disorders has not decreased in Australia, Canada, England or the USA, despite substantial increases in the provision of treatment in the four countries.

We therefore have a somewhat mixed picture before the COVID-19 pandemic. The use of MHS appeared to be increasing while the community rates of psychological distress had been levelling off after a major increase in the first half of the last decade. Overall happiness and life satisfaction measures have been stable since the beginning of 2010. It's hardly good news. But it's also inaccurate to say there's a "mental health crisis" in New Zealand. The major crisis, if there is one, may be in gaining access to MHS, which are having to manage increasing numbers of patients. This is consistent with international epidemiological research pointing to a high, but relatively stable, incidence and prevalence of mental disorder, coupled with evidence that more and more people are using MHS and consuming psychotropic medication.¹¹

Although we may not have a mental health crisis in the traditional sense of increasing rates of psychological distress, mental disorders and suicide, we do have a crisis in the sense that demand for MHS is increasing and that the expansion of those services and treatments is not leading to improvements in mental health at a community level. To add to the confusion, we have experienced a major epidemic in the past year. The impact of COVID-19 on mental health is not yet clear. New Zealand is relatively unique in that the impact and experience of COVID-19 is around a brief strict lockdown and the post-lockdown economic effects rather than the direct effects of the virus. Early evidence suggests a significant proportion of the population was adversely affected by the lockdown—particularly young people.¹² However, our experience may be very different from those countries where the direct effect of the virus was much greater.

The He Ara Oranga Report

Partly in response to the perceived mental health crisis, the New Zealand government set up a commission that produced the He Ara Oranga (HAO) Report in 2018.³ The government, in response to the HAO Report, announced a \$1.9 billion mental health package in their Wellbeing Budget.¹³ The report correctly recognised that doing more of the same was not a good strategy, given the evidence discussed above.

The HAO Report suggested two major ways to improve New Zealanders' mental health. The first, which could be seen as a preventative strategy, is based on individual psychological therapies like Cognitive Behavioural Therapy. This "Big Community" policy seeks to extend psychological treatment to those suffering psychological distress so that around 6.5% of the population (325,000 people per annum) with mild to moderate anxiety and depression will receive an intervention (Wellbeing Budget 2019).

In our view, there are two major flaws in this strategy. The first is how it would be organised and funded. It would be difficult, perhaps impossible, to train sufficient staff to implement such a programme. At the current rate of training psychologists and counsellors, it is estimated that it will be more than a decade before the workforce is sufficient to meet the *current* need.¹⁴ In addition, at present only a small proportion of those diagnosed with a mental disorder actually receive psychological treatment—so why would (or should) less severe individuals be prioritised?

The second flaw is that similar, albeit less ambitious, programmes have been initiated in Australia (Better Access; 4.7% population coverage) and the UK (Improving Access to Psychological Therapies: IAPT; 1.5% population coverage)¹⁶ and the results are not encouraging. In Australia, a recent review reported no impact on population mental health outcomes or suicide rates,¹⁵ and the introduction of IAPT in the UK has not been associated with a reduced prevalence of common mental disorders (based on the Adult Psychiatry Morbidity Survey). On the contrary, these disorders have continued

to increase.¹⁶ Given this evidence, we are concerned that there appears to be no systematic plan to assess the efficacy of the proposed psychotherapy programme.¹⁷

The second major strategy in the HAO Report recommends a decisive shift from Big Psychiatry to a new sector called "Big Community." This sounds good, that is, moving away from a medically led system where "most resources are used for psychiatric treatments, clinics and hospitals"³ and which the HAO Report labelled as having a colonising world view with a legacy of paternalism and human rights breaches. In contrast, the HAO Report praised Big Community as having a strong commitment to partnership, recovery, spirituality and human rights. This is all very well as far as it goes but runs into a major flaw: "big" psychiatry in New Zealand is actually rather small. For the latest available country data between the years 2016 and 2020, New Zealand was ranked 32nd out of 38 OECD countries for the number of hospital psychiatric beds.¹⁹ New Zealand reported 32 psychiatric beds per 100,000 population in 2020 while the OECD average was double that at 65.¹⁹ Moving resources from struggling, already under-resourced, public MHS into the community appears a dangerous and an inequitable strategy. We appear to have forgotten that the hospital component of a community health is an essential part of good and balanced practice.²⁰ In addition, we do not appear to have well-resourced community facilities. A recent global report notes that New Zealand, as well as having very low bed numbers, also has the lowest number of community care facilities of all countries surveyed.²¹ Overall, it would have been more accurate for the HAO Report to have used the term "Small Psychiatry," which would have helped explain the problems facing the public sector.

Possible responses

1. Serious mental illness: The risk of following the HAO Report is that we may establish widespread inverse care by tailoring health services for the mild and moderately ill and increasingly neglecting the most severely and chronically ill patients, as has occurred in other English-speaking countries, particularly the USA. Rather than focussing on reducing Big

Psychiatry, we suggest that the government increases resources for it and tries to raise psychiatry bed numbers from the current 32 beds per 10,000 to at least 50 beds per 100,000 (OECD average is 65 beds per 100,000).^{22,23} This is where there is the most need and where those who suffer deprivation are likely to seek help.

To better identify, follow-up and assess treatment outcomes among people with serious mental illness, we suggest that New Zealand is an ideal location for a mental health registry. A useful first step would be to link health datasets between primary, secondary and tertiary mental healthcare to enable mental health service researchers to evaluate the cost–benefit of new policies and investments in reducing hospital demand and improving overall mental health related outcomes. A more comprehensive mental health registry would also link social and non-health related datasets (education, unemployment, housing, corrections) with healthcare datasets at the individual level. This would enable a more comprehensive understanding of the likely bi-directional impact between social and non-health-related policy changes and mental health service utilisation (primary, secondary, tertiary) and outcomes (psychological distress, suicide, etc). Careful consideration of privacy issues would need to be part of database setup. A specific example that New Zealand should consider adopting is the national Danish Schizophrenia Registry, which was first established in 2003 and covers all patients diagnosed with schizophrenia who are receiving mental health care in psychiatric hospitals or outpatient clinics.²⁴ The Danish Schizophrenia Registry contains 21 clinical quality measure in relation to the following domains: diagnostic evaluation, antipsychotic treatment including adverse reactions, cardiovascular risk factors including laboratory values, family intervention, psychoeducation, post-discharge mental healthcare, assessment of suicide risk in relation to discharge and assessment of global functioning.²⁴ This registry also links its data with other national non-health related datasets. The Danish Schizophrenia Registry has been an invaluable tool for clinicians, researchers and policymakers helping to understand

and improve the quality of care for this important patient cohort.²⁴

In conjunction with setting up national mental health registries, consideration should also be given to setting up national mental health service evaluation and research units to analyse the effectiveness of government policy changes and investments. We suggest that approximately 2–3% of existing and new investments in mental health should be allocated to mental health service research and registry investment. Such investment will ensure that new programmes are fully evaluated before endorsing and implementing these measures nationwide.

2. Population distress: In terms of New Zealand's levels of population distress, rather than reducing Big Psychiatry and offering therapy to all, an alternative strategy is to target resources towards individuals who suffer most from mental distress. Increasing international data has allowed more sophisticated ecological studies to show what factors are associated with psychological distress. These factors are consistent and not surprising: lower incomes, poor housing and unemployment (possibly better expressed as “deprivation”), as well as discrimination, neighbourhood safety, gender equality and corruption.²⁵ None of these appear likely to respond to individual counselling.

New Zealand already has in place some important characteristics of mentally health nations, which we generally take for granted. Our quality of government, assessed using measures of freedom and perception of corruption, is high. Education, lifespan and gender equality are reasonable, albeit with obvious room for improvement.²⁵ Income inequality has increased, but while it negatively affects mental health, the effect sizes are small and inconsistent.²⁶ As we noted, New Zealand is highly ranked in the World Happiness Report.

However, we also have a significant section of the population that suffers from deprivation, and this group has much more psychological distress. Thus, we suggest that resources should be directed towards this group. Data from the New Zealand Health Survey show that those in the most deprived decile were around 30 times more

likely than those in the least deprived decile to report a K10 score suggesting clinical anxiety and depression.²⁷ The suicide rates for the lowest quintile in 2016 were two to three times higher than the least deprived quintile.²⁸ These groups are also much more likely to use mental health services; the latest Ministry of Health data on mental health service use report that the most deprived quintile in New Zealand is three to nine times more likely to use various MHS.²⁹

Since relying on healthcare alone to improve mental health outcomes can be expensive and inefficient, we advocate for integration with social services and practical help. We suggest, as have others,³⁰ that areas associated with higher levels of deprivation should receive more targeted focus in terms of resources, prevention and management of serious mental illness. Specific programmes (particularly supported employment, which has a strong evidence base³¹) could be resourced and evaluated. Providing quality care and education early in life and strengthening economic support to families is likely to be associated with fewer adverse childhood experiences.³²

E-therapies may be more practical and efficient for population groups who respond to individual psychological therapies. In recent reviews, e-therapy has appeared superior to no treatment or waitlist controls for patients with depression,³³ generalised anxiety

disorder, panic disorder and social anxiety disorder.³⁴ Although the effect sizes are modest and tend to fade over time,³⁵ this is similarly true for face-to-face therapies. This may be enhanced by using therapist guided e-therapies.

Conclusion

Although characterising New Zealand's mental health as being in crisis may be overstating the evidence, there seems little doubt that significant changes in the conceptualisation and delivery of MHS are necessary. Based on the evidence, we suggest that the focus should be on deprivation and the severe mental illness. Rather than expand psychotherapy to middle class New Zealand and further reduce resources to those with serious mental illness, we advocate for better resourced MHS integrated with social services, such as supported employment, supported housing and early interventions. In addition, we suggest locating these integrated services in areas with higher levels of deprivation and that they consider ethnic, cultural and historical factors associated with deprivation. We also support specific investment in mental health registries integrated with service evaluation and policy research units, to ensure that new and existing mental health programme investment delivers better public mental health outcomes and also delivers value for money.

Competing interests:

Nil.

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

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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.”

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.

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