Brief Report

Beliefs regarding COVID-19 vaccines among Canadian workers in the intellectual disability sector prior to vaccine implementation

Y. Lunsky,[1] (iD) **N. Kithulegoda,[2,3]** (iD) **K. Thai,[2,4] J. L. Benham,[5,6]** (iD) **R. Lang,[6] L. Desveaux[2,3]
& N. M. Ivers[2,3]** (iD)

1 *Azrieli Adult Neurodevelopmental Centre, Centre for Addiction and Mental Health, Toronto, ON, Canada*
2 *Womens College Research Institute, Toronto, ON, Canada*
3 *Institute of Health Policy, Management, and Evaluation, University of Toronto, Toronto, ON, Canada*
4 *Dalla Lana School of Public Health, University of Toronto, Toronto, ON, Canada*
5 *Department of Community Health Sciences, Cumming School of Medicine, University of Calgary, Calgary, AB, Canada*
6 *Department of Medicine, Cumming School of Medicine, University of Calgary, Calgary, AB, Canada*

Abstract

Background   Workers supporting adults with intellectual disabilities (ID) experience significant stress in their essential role during COVID-19 due to the high risk of their clients contracting COVID-19 and having adverse outcomes. The purpose of the current study was to describe the attitudes of workers towards COVID-19 vaccination prior to vaccination rollout, with a view to informing strategies to promote vaccine uptake within this high-risk sector.
Methods   An online survey was sent via email to workers supporting adults with ID in Ontario, Canada, between January 21 and February 3, 2021 by agency leadership and union representatives.
Results   Three thousand and three hundred and seventy-one workers, representing approximately 11.2% of Ontario workers supporting adults with ID completed an online survey. Most reported that they

were very likely (62%) or likely (20%) to get a COVID-19 vaccine (vaccination intent) although 18% reported they were less likely to do so (vaccination nonintent). Workers with vaccination nonintent were younger and were more likely to endorse the beliefs that (1) it will not benefit them or those around them, (2) it was not part of their job, (3) rapid development confers uncertainties and risks, and (4) they were scared of potential vaccine side effects.
Conclusions   There is need to address common misconceptions among workers supporting adults with ID to help activate them as vaccine advocates in the communities they serve. Partnered efforts between workers, unions and agency leadership with public health experts to address concerns are required.

Keywords COVID-19, Intellectual disabilities, Vaccines, Workers

Correspondence: Dr Yona Lunsky, Azrieli Adult Neurodevelopmental Centre, Centre for Addiction and Mental Health, Toronto, ON, Canada (e-mail: yona.lunsky@camh.ca).

Introduction

COVID-19 has been especially difficult for people with intellectual disabilities (ID) and those who support them. Adults with ID are at greater risk of contracting COVID-19 (Glover 2020; Landes *et al.* 2020a; Gleason *et al.* 2021) and experiencing severe morbidity and mortality as a result of the disease (Clift *et al.* 2020; Landes *et al.* 2020b; Gleason *et al.* 2021). There are several important contributors to this risk, including age, disability severity, comorbidities (Glover 2020; University of Bristol 2020; Gleason *et al.* 2021), and the number of people in their home (e.g. in group homes or congregate living spaces) (Landes *et al.* 2020a; Landes *et al.* 2020b; Ayoubkhani and Bosworth 2021). This is likely due in part to the number of workers needed to support people in these settings, each of whom may be carriers of the disease, therefore increasing the number of potential routes of transmission (Shah *et al.* 2020; Landes *et al.* 2020a). As a vulnerable health population, it is critical that those caring for adults with ID are supported to take the necessary steps to prevent spreading COVID-19. In addition to following public health measures, a key pathway to reducing spread is vaccination.

Internationally, vaccination prioritisation committees have prioritised health and social service workers providing hands on care to the most vulnerable populations (Wise 2020; Mills and Salisbury 2021). Although there has been some attention paid towards vaccination intent in health care workers, there has yet to be discussion about vaccination intent by social service workers supporting adults with ID. It is critical to understand their vaccine-related knowledge and their barriers and facilitators to vaccination, in order to inform supportive measures.

The purpose of this study was to measure vaccination intent of social service workers supporting adults with ID in Ontario, Canada. In addition to describing vaccination intent broken down by demographic variables, we also sought to determine demographic and behavioural predictors of vaccination intent and to identify trusted sources and platforms used for COVID-19 information. This study is part of the 19 To Zero campaign, a national effort comprised of experts dedicated towards shifting public perceptions around COVID-19 behaviours and vaccination (19toZero 2021).

Methods

Participants

Survey respondents were workers employed within the social services sector supporting adults with ID in Ontario, Canada's most populous province of nearly 14 million people. There are an estimated 30 000 workers employed in the Ontario social services sector supporting adults with ID (Hickey *et al.* 2018). At the time of survey completion, vaccines were only being distributed to health care workers and older adults living in long-term care facilities (i.e. nursing homes) and were not yet being offered to study participants.

Measures

Building off of a prior survey targeting unregulated health care workers in long-term care and home care settings for older adults (Desveaux *et al.* 2021), a brief 30-item survey was designed collecting key demographic information (age, gender, ethnicity, education, employment status, employment setting, role and years of experience), vaccination intent (1 item), information about vaccine beliefs (16 items), who they consider to be the most trusted sources of COVID-19 information (3 items), and which media platforms they turn to for reliable COVID-19 information (2 items).

Procedure

To enhance acceptability, input on survey items was provided by two provincial committees involved in vaccination planning for ID sector agencies along with union leads in the ID sector. Once the survey was finalised, a standardised recruitment email describing the study was forwarded by ID sector agency directors to their employees and by two union leaders in the ID sector to their respective networks of workers. This recruitment email contained a link to an online letter of information and consent form, which directed them to the survey if they agreed to participate. Study data were collected and managed using Qualtrics electronic data capture tools hosted at [Women's College Hospital. Qualtrics is a secure,

web-based software platform designed to support data capture for research studies. The survey was active over a 2-week period between January 21 and February 3, 2021. Participants could submit their names for a raffle to receive one of five gift cards of $150 CAD. The study was approved by the Women's College Hospital] Research Ethics Board.

Analysis

Descriptive statistics for each survey question was performed. Vaccination intent was measured by the question 'How likely is it that you would get a COVID-19 vaccine when it is offered?'. Participant characteristics was summarised for all respondents that completed the survey in Table 1. Univariate and multivariable logistic regression was performed to explain vaccination intent adjusting for confounders in Table 2. Multiple imputation was performed to handle missing data for any of the predictors included in the model. Missing data included skipped questions and when participants selected 'prefer not to answer'. Multiple imputation using multiple correspondence analysis was used because the data contained only nominal categorical data. Ten imputations were performed, a number deemed sufficient by Rubin (1987) and Schafer and Olsen (2000), and results were pooled. Participants that responded 'very likely' or 'somewhat likely' were grouped together into the vaccination intent. Participants that responded 'somewhat unlikely' or 'very unlikely' were combined into the vaccination nonintent. Other 5-point Likert questions were dichotomised as either 'agree', which includes the responses 'strongly agree' and 'agree', or 'did not agree', which includes responses 'strongly disagree', 'disagree' and 'not sure/can't say'. Predictors of vaccination intent included sociodemographic characteristics and vaccine beliefs that were selected based on a related study with nonphysician health care workers (Desveaux *et al.* 2021). Analyses were conducted using R. The threshold used to determine the level of significance for all *P* values was 0.05.

Results

Three thousand and three hundred and seventy-one workers from Ontario, Canada, consented to participate in this study. Respondents represented

approximately 11.2% of the workforce in Ontario supporting adults with ID. Overall, there was a total of 40% missing data across all predictors of vaccination intent, with 4% to 11% of missing data per predictor. Eighty-five per cent of respondents identifed as women and 14% as a visual minority, with 11% of those identifying as a visual minority born outside of Canada. Sixty-five per cent were under 50 years old, and 68% were either married or common-law. The minority of participants (11%) reported living alone. Thirty per cent of respondents had a university degree and 64% had a college diploma. Working in residential care was most common (53% group homes and 16% supported living). More than half of respondents (62%) reported that they were 'very likely' to get a COVID-19 vaccine, and 20% reported that they were 'somewhat likely' to do so. The remainder were 'somewhat unlikely' (7%) or 'very unlikely' to get vaccinated (11%). Table 1 summarises participant characteristics, broken down by reported intent to get a COVID-19 vaccine.

Table 2 presents factors associated with vaccination intent. Individuals between the ages of 18–29 and 30–39 were 2.74 [95% confidence interval (CI) 1.70–4.43] and 1.75 (95% CI 1.16–2.64) more likely to express vaccination nonintent compared with those 50 and older, respectively. Those that believed the vaccine is unnecessary because of good health (4.22, 95% CI 2.66–6.68), did not trust the vaccine because of its fast development (5.72, 95% CI 3.84–8.53), and were scared of the vaccine's potential side effects (2.30, 95% CI 1.56–3.39) had a higher odds of reporting vaccination nonintent compared with those who did not have those beliefs.

There was a lower odds of concern about becoming ill with COVID-19 (0.51, 95% CI 0.34–0.76) among respondents who reported intention not to vaccinate; these respondents also had lower odds of believing getting vaccinated would protect their family (0.19, 95% CI 0.13–0.28); that getting vaccinated would protect their clients (0.36, 95% CI 0.24–0.54); that finding time to get vaccinated was overwhelming (0.60, 95% CI 0.36–0.98); that getting vaccinated was part of their job (0.43, 95% CI 0.28–0.66); Those with vaccination nonintent had lower odds of being concerned about their clients becoming ill (0.57, 95% CI 0.34–0.97); of getting the flu shot in a normal year (0.61, 95% CI 0.43–0.88); and of getting the vaccine if their co-workers did (0.16, 95% CI 0.08–0.29).

Table 1 Characteristics of participants, overall and by initial willingness to get a COVID-19 vaccine

Characteristic	Overall (N = 3371) No. (%)	Vaccination intent (n = 3259)				
		Very likely (n = 2006) No. (%)	Somewhat likely (n = 642) No. (%)	Somewhat unlikely (n = 240) No. (%)	Very unlikely (n = 371) No. (%)	P value[a,b]
Age group, years (n = 3303)						
18–29	604 (18.3)	305 (52.8)	127 (22.0)	63 (10.9)	83 (14.4)	<0.0001
30–39	789 (23.9)	422 (55.4)	163 (21.4)	58 (7.6)	119 (15.6)	
40–49	763 (23.1)	431 (58.2)	166 (22.4)	64 (8.6)	80 (10.8)	
50+	1147 (34.7)	816 (72.8)	173 (15.4)	51 (4.5)	81 (7.2)	
Sex (n = 3286)						
Female	2782 (84.7)	1627 (60.5)	536 (19.9)	206 (7.7)	320 (11.9)	0.0002
Male	504 (15.3)	345 (69.7)	90 (18.2)	29 (5.9)	31 (6.3)	
Country of birth (n = 3317)						
Outside Canada	380 (11.5)	236 (64.7)	70 (19.2)	26 (7.1)	33 (9.0)	0.44
Canada	2937 (88.5)	1742 (61.2)	561 (19.7)	210 (7.4)	333 (11.7)	
Ethnicity (n = 2526)						
African or Caribbean	125 (4.9)	69 (59.0)	27 (23.1)	10 (8.5)	11 (9.4)	0.01
Asian	113 (4.5)	71 (66.4)	26 (24.3)	9 (8.4)	1 (0.9)	
Indigenous, First Nations or Metis	90 (3.6)	45 (52.3)	15 (17.4)	6 (7.0)	20 (23.3)	
Latin	33 (1.3)	22 (66.7)	7 (21.2)	3 (9.1)	1 (3.0)	
Mixed	28 (1.1)	18 (64.3)	3 (10.7)	3 (10.7)	4 (14.3)	
Unknown[b]	84 (3.3)	46 (59.0)	13 (16.7)	6 (7.7)	13 (16.7)	
European	2053 (81.3)	1288 (64.0)	375 (18.6)	137 (6.8)	214 (10.6)	
Highest education level (n = 3259)						
No certificate, diploma or degree	15 (0.5)	9 (60.0)	3 (20.0)	2 (13.3)	1 (6.7)	0.0005
High school diploma	198 (6.1)	128 (66.7)	34 (17.7)	9 (4.7)	21 (10.9)	
College diploma	2081 (63.9)	1158 (57.9)	413 (20.7)	173 (8.7)	256 (12.8)	
University degree	965 (29.6)	653 (68.6)	168 (17.6)	50 (5.3)	81 (8.5)	
Healthcare role (n = 3235)						
Direct care	2900 (89.6)	1698 (60.7)	556 (19.9)	208 (7.4)	337 (12.0)	0.001
Management	134 (4.1)	106 (79.7)	15 (11.3)	5 (3.8)	7 (5.3)	
Administration	178 (5.5)	113 (65.3)	37 (21.4)	16 (9.2)	7 (4.0)	
Unknown	23 (0.7)	15 (68.2)	3 (13.6)	2 (9.1)	2 (9.1)	
Setting of employment (n = 3137)						
Day programme, employment support or community-based activities	442 (14.1)	268 (62.5)	89 (20.7)	43 (10.0)	29 (6.8)	0.11
SIL programme or independent living	382 (12.2)	229 (62.6)	75 (20.5)	22 (6.0)	40 (10.9)	
Family homes or respite	355 (11.3)	221 (63.7)	59 (17.0)	27 (7.8)	40 (11.5)	
Office setting	66 (2.1)	43 (66.2)	13 (20.0)	5 (7.7)	4 (6.2)	
Unknown	27 (0.9)	18 (69.2)	4 (15.4)	2 (7.7)	2 (7.7)	
Group homes	1865 (59.5)	1087 (60.3)	354 (19.6)	130 (7.2)	233 (12.9)	
Position (n = 3295)						
Part-time or casual	979 (29.7)	542 (57.3)	192 (20.3)	82 (8.7)	130 (13.7)	0.001
Full-time	2316 (70.3)	1433 (63.7)	438 (19.5)	150 (6.7)	228 (10.1)	
Unionised (n = 3254)						
No	1083 (33.3)	720 (68.1)	184 (17.4)	70 (6.6)	83 (7.9)	<0.0001
Yes	2171 (66.7)	1236 (58.8)	430 (20.5)	163 (7.8)	272 (12.9)	

Table I.   *(Continued)*

	Overall (N = 3371)	Vaccination intent (n = 3259)				
		Very likely (n = 2006)	Somewhat likely (n = 642)	Somewhat unlikely (n = 240)	Very unlikely (n = 371)	
Characteristic	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	P value[a,b]
Marital status (n = 3178)						
Married or living common law	2168 (68.2)	1335 (63.4)	398 (18.9)	155 (7.4)	219 (10.4)	0.48
Other	1010 (31.8)	599 (60.9)	205 (20.9)	69 (7.0)	110 (11.2)	

[a]Analyses were based on two groups: (1) a combination of those who selected 'somewhat likely' and 'very likely' and (2) a combination of those who selected 'somewhat unlikely' and 'very unlikely'. Comparisons between the two groups were made using χ^2 tests. When χ^2 tests approximation may be incorrect due to small sample sizes, a χ^2 test with simulated p-value based on 2000 replicates was performed.

[b]Grouped into the 'Unknown' ethnicity category were those that selected 'Other' but did not specify their ethnicity. Grouped into the 'Asian' category were those that selected: Arab/West Asian (e.g. Lebanese, Moroccan, Iranian and Turkish), South Asian (e.g. East Indian, Pakistani, Sri Lankan and Bangladeshi), other East and South East Asian (e.g. Vietnamese, Korean and Japanese).

Respondents reported public health websites (85%) and television/radio news (58%) as the most commonly used sources of COVID-19 information, and considered public health websites (72%) and physicians or other health care providers (45%) to be most trusted for COVID-19 information. The most trusted organisations for COVID-19 information were healthcare institutions (80%) and their employer (50%). In terms of social media platforms, they most commonly used Facebook messenger (75%) and YouTube (53%), and considered Facebook (51%) and YouTube (24%) to be the most trusted for COVID-19 information (Table 3). These top two rankings were the same among respondents that were and were not intending to get the vaccine, when answering questions regarding the use of and trust of social media platforms, organisations and sources for COVID-19 information. Among those with vaccination nonintent, the third most trusted social media platforms were Facebook messenger and Instagram (both 13%), whereas it was Twitter for their counterparts who were planning to get vaccinated (15%).

Discussion

This study explored vaccination intent and behavioural predictors of vaccination intent in workers providing support to adults with ID in Ontario, Canada. The majority of individuals surveyed reported that they were likely to get a vaccine when it becomes available to them. However, younger age, safety concerns and the belief that the vaccine was not necessary due to good health were associated with not intending to be vaccinated. As workers continue to serve an essential role in protecting adults with ID from contracting COVID-19, it is imperative to attend to the health and safety of this group of essential workers, which includes responding to their educational needs in relation to a COVID-19 vaccine. Failure to do so will be harmful to workers in this role, which accordingly, will have detrimental consequences to the people with ID who they support.

Age was the only significant demographic contributor of vaccination nonintent in the current study. How young people perceive risks, and the types of concerns they have can be different than their older colleagues despite working in the same environment, and so strategies to engage with them also need to vary. Respondents in this study were fairly representative of Ontario workers in the sector with regard to age, gender, education and union status (Hickey *et al.* 2018). There was a slightly higher proportion of respondents who belonged to a visible minority (15.4% compared with 8.3%); however, this is lower than the general Ontario workforce (28%) (Hickey *et al.* 2018) as well as what was seen in the parallel survey of health care workers (Desveaux

Table 2 Factors associated with COVID-19 vaccination nonintent

Characteristic	Odds ratio (95% CI) vaccination nonintent ('did not agree' vs. 'agree' to take a COVID-19 vaccine)	
	Unadjusted	Adjusted with missing data imputed
Demographics		
Age group (years)		
18–29	2.53 (1.95–3.29)	**2.74 (1.70–4.43)**
30–39	2.27 (1.77–2.90)	**1.75 (1.16–2.64)**
40–49	1.81 (1.40–2.34)	1.20 (0.79–1.83)
50+	1 [Reference]	1 [Reference]
Sex		
Female	1.76 (1.32–2.35)	1.58 (0.97–2.59)
Male	1 [Reference]	1 [Reference]
Country of birth		
Outside Canada	0.82 (0.61–1.10)	1.25 (0.70–2.26)
Canada	1 [Reference]	1 [Reference]
Ethnicity		
African or Caribbean	1.04 (0.64–1.69)	0.81 (0.35–1.86)
Asian	0.49 (0.25–0.95)	0.88 (0.33–2.36)
Indigenous, First Nations or Metis	2.05 (1.28–3.30)	1.73 (0.67–4.43)
Latin	0.65 (0.23–1.87)	1.22 (0.21–7.24)
Mixed	1.58 (0.67–3.74)	1.11 (0.27–4.55)
Unknown[b]	1.53 (0.90–2.59)	0.88 (0.36–2.17)
European	1 [Reference]	1 [Reference]
Highest education level		
No certificate, diploma or degree	1.57 (0.44–5.63)	1.11 (0.12–10.15)
High school diploma	1.16 (0.75–1.79)	0.66 (0.32–1.37)
College diploma	1.71 (1.38–2.12)	1.19 (0.81–1.75)
University degree	1 [Reference]	1 [Reference]
Healthcare role		
Direct care	1 [Reference]	1 [Reference]
Management	0.41 (0.23–0.75)	0.96 (0.38–2.38)
Administration	0.63 (0.40–0.99)	0.79 (0.32–1.95)
Unknown	0.92 (0.31–2.73)	1.95 (0.27–14.08)
Setting of employment		
Day programme, employment support or community-based activities	0.80 (0.61–1.06)	0.98 (0.60–1.61)
SIL programme or independent living	0.81 (0.60–1.09)	0.77 (0.45–1.31)
Family homes or respite	0.95 (0.71–1.27)	1.46 (0.91–2.35)
Office setting	0.64 (0.31–1.30)	1.28 (0.30–5.42)
Unknown	0.72 (0.25–2.11)	1.08 (0.21–5.59)
Group homes	1 [Reference]	1 [Reference]
Position		
Part-time or casual	1.43 (1.18–1.73)	1.13 (0.80–1.60)
Full-time	1 [Reference]	1 [Reference]
Unionised		
No	0.65 (0.53–0.79)	0.98 (0.68–1.42)
Yes	1 [Reference]	1 [Reference]
Marital status (*n* = 3178)		
Married or living common law	1 [Reference]	1 [Reference]
Other	1.03 (0.85–1.26)	0.75 (0.53–1.05)

Table 2. *(Continued)*

| | Odds ratio (95% CI) vaccination nonintent ('did not agree' vs. 'agree' to take a COVID-19 vaccine) | |
Characteristic	Unadjusted	Adjusted with missing data imputed
Beliefs		
Concerned about becoming ill with COVID-19	0.15 (0.12–0.18)	**0.51 (0.34–0.76)**
Concerned about clients becoming ill with COVID-19	0.21 (0.16–0.28)	**0.57 (0.34–0.97)**
Perceive COVID-19 infection as severe	0.42 (0.34–0.51)	1.02 (0.72–1.46)
Getting vaccinated will help protect my family	0.02 (0.02–0.03)	**0.19 (0.13–0.28)**
Getting vaccinated will protect my clients	0.03 (0.03–0.04)	**0.36 (0.24–0.54)**
Worried by lost wages to recover from vaccine	0.97 (0.81–1.16)	0.75 (0.53–1.06)
Finding time to get vaccinated is overwhelming	0.60 (0.46–0.79)	**0.60 (0.36–0.98)**
Getting vaccinated is part of my job	0.05 (0.04–0.07)	**0.43 (0.28–0.66)**
I get the flu shot in a normal year	0.13 (0.10–0.17)	**0.61 (0.43–0.88)**
Not necessary because I am in good health	17.98 (13.55–23.85)	**4.22 (2.66–6.68)**
Do not trust vaccine because of fast development	21.30 (16.57–27.38)	**5.72 (3.84–8.53)**
Scared of vaccine's potential side effects	6.25 (5.02–7.77)	**2.30 (1.56–3.39)**
More likely to get the vaccine if my co-workers do	0.06 (0.04–0.11)	**0.16 (0.08–0.29)**

Table 3 Overall most used and trusted social media platforms, sources and institutions for COVID-19 information

Ranking	Most used social media platforms	Most trusted social media platforms
1	Facebook messenger (74.8%)	Facebook (51.2%)
2	YouTube (52.5%)	YouTube (23.5%)
3	Instagram (51.6%)	Twitter (14.7%)
Ranking	**Most used sources**	**Most trusted sources**
1	Public health websites (84.8%)	Public health websites (71.7%)
2	Television/radio news (58.3%)	Physicians or other health care providers (44.8%)
3	Employer (46.3%)	Television/radio news (18.5%)
Ranking	**Most used institutions**	**Most trusted institutions**
1	N/A	Healthcare (79.5%)
2	N/A	Employer (49.5%)
3	N/A	Government (45.6%)

et al. 2021). This may explain the non-significant differences in vaccine intent found between ethnicities in this study as previous studies have found racial and ethnic differences in COVID-19 vaccine uptake (Nguyen *et al.* 2021; Razai 2021). Further research is needed.

In contrast to the extensive attention being paid to the experiences of health care workers working in long-term care settings during COVID-19, far fewer studies have focused on the ID workforce (Bobbette *et al.* 2020; Hewitt *et al.* 2020; Kavanagh *et al.* 2020). To date, their beliefs and perspectives towards the COVID-19 vaccines have yet to be understood. Findings here mirror what has been reported by non-physician health care workers in Canada, meaning vaccine education initiatives targeting health care workers can likely be extended to those in the ID workforce. That said, it is important that workers in the ID sector see themselves in this messaging, both in terms of demographic characteristics and professional identity (Presseau *et al.* 2021). Messaging on public health websites and social media are effective channels to target the ID workforce as well as the population they serve by tailoring existing messaging to align with behaviour science principles (Desveaux *et al.* 2021). Additionally, equipping health care providers with information about the risks of workers in the ID sector and the people that they support, and an understanding of where this group falls in vaccination rollout plans will help to tailor communications and address uncertainty in this population.

In thinking about efforts moving forward, attention should be paid to workers who are younger (<40 years old) or express hesitation or uncertainty towards the vaccines (due to perceived risk of side effects, its fast development or the perception of good health/immunity). Employers should encourage their workers to engage with their trusted health care providers to learn more about the vaccine as it relates to their individual circumstances. Because TV/radio news are a common source for COVID-19 information, these channels can encourage vaccine confidence by including people from and references to the ID sector. Information on trusted platforms such as public health websites should also focus on demystifying misconceptions and fears towards the vaccines, specifically addressing misperceptions that the speed of development results in additional risk.

Limitations of the current study include that data were obtained solely from voluntary self-report and may not capture the perspectives of workers who did not opt to complete the survey, which likely includes those individuals less comfortable with digital platforms. Further, self-reporting vaccination intent may not match what will actually occur when the vaccine is offered. As well, there were fewer people who were visual minorities represented here compared with the Ontario workforce. It would be important to explore in greater depth the unique concerns minority groups may have with regard to the vaccine and potential strategies to address such concerns. Finally, findings are specific to the ID sector in Ontario and were collected at a specific time point when discussion about vaccines was happening but rollout in the sector had yet to occur. Longitudinal research is necessary to understand worker beliefs and experiences with the vaccine over time, as well as in different jurisdictions.

Lessons about effective ways to support workers in the ID sector can be learned from current efforts in the health sector and also, from further in-depth qualitative research in collaboration with members of the ID sector workforce themselves. It is vital that workers and health care experts work together to co-design vaccination information materials and dissemination methods to reach workers with the information that they need. This should be done with ongoing engagement with union and agency leaders to ensure comprehensive support.

Conflict of Interest

None to disclose.

Data Availability Statement

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

Ethics Approval

This study was reviewed and approved by the Womens College Hospital Research Ethics Board.

Source of Funding

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