

COVID-19 vaccine hesitancy in care home staff: a survey of Liverpool care homes

Introduction

Since the start of the COVID-19 pandemic and up until the roll out of the COVID-19 vaccine in English care home on 8th December 2020, 20.7% of all reported care home deaths have been due to COVID-19 [1]. The majority of these occurred in homes which had experienced a COVID-19 outbreak [2]. The Liverpool City Council (LCC) area (North West of England) had significantly more COVID-19 related deaths in its care home population (33.4%, n=206) compared to the English national average; a risk ratio of 1.62 (95% 1.45-1.81, p<0.001) [1]. At least 62% of Liverpool care homes have experienced COVID-19 outbreaks [3]. LCC serves a population of almost half a million people, and is one of the most deprived local authorities in England, with lower than average life expectancy (for males 76 years in Liverpool and 80 years in England, for females 80 and 83 years respectively); 14.6% of its population is over 65 [4,5].

Care home residents have high levels of frailty and multi-morbidity [6]. They are affected by immunosenescence [7], which makes them very susceptible to SARS-CoV-2 infection. There are three main portals of entry for SARS-CoV-2 into a care home: newly admitted or readmitted residents; staff; and visitors. Strategies to limit infections and outbreaks have included: improved Infection Prevention and Control (IPC); testing staff, visitors and residents; isolation and zoning; limiting non-essential professional visits; and restricting indoor visiting [8]. Despite these measures, COVID-19 outbreaks have continued [1]. The COVID-19 vaccine programme brought hope to the care home staff, residents and the wider community. At the time of this study, it was thought that successful vaccination of care home staff and residents would result in less severe outbreaks with reduced morbidity and mortality. Subsequently it has been shown that vaccination in care home residents reduced COVID-19 infections, hospitalisations and deaths, but currently regular boosters are needed to maintain protective immunity [9]. In order to improve population protection, it is critical that vaccine uptake amongst care home staff and residents is optimised.

A recent systematic review has defined vaccine hesitancy as the 'state of indecisiveness regarding a vaccination decision'[10,11]. This is the definition that we utilise throughout this work. International surveys have shown that 28% of the general population are COVID-19 vaccine hesitant, with the highest rates in the 25-34 age group and in females [12]. Hesitancy reasons include concerns about safety, lack of effectiveness, and the belief that vaccination is unnecessary [13]. Twenty-nine percent of health care workers are hesitant, with higher levels in young adults and females, and 41% of those hesitant have safety concerns about the vaccine [14]. An American study of 11,460 care homes found only 37.5% of staff members had received a COVID-19 vaccine, compared to 77.8% of their residents [15]. These data were based on vaccination administration data from Skilled Nursing Facilities in the Pharmacy Partnership for Long-Term Care Program, which is coordinated by the Centers for Disease Control and Prevention. No qualitative data exploring motivators or hesitancy around vaccination were explored. At the time our evaluation was performed only one study had investigated COVID-19 hesitancy levels in care home staff (in Indiana, United States of America) [16]. In this study, 36% were reluctant, with the main barrier being concerns about side effects. Hesitancy levels were higher in female and younger members of staff. Another study of American health care workers found that there were low levels of confidence in the COVID-19 vaccine [17], and that the main reasons for vaccine hesitancy included vaccine safety concerns, vaccine efficacy, workplace requirements (this could have both a positive and negative influence), and social influences [18].

On the 23rd of December 2020 the first doses of COVID-19 vaccines were offered to care home residents and staff in the 87 care homes within LCC. By the 29th of January 2021, 70.3% of care home residents, and 39.8% of staff had received their first vaccination (confidential data provided by LCC and Liverpool Clinical Commissioning Group vaccine tracker). A rapid service evaluation of the vaccination roll-out was performed to assess whether low levels of vaccine uptake in Liverpool care home staff were due to high levels of vaccine hesitancy, or other unidentified factors. The results of this evaluation directly informed immediate strategy and action plans to ensure vaccine uptake in care home staff were as high as possible.

Methods

An anonymous online survey was designed by members of LCC's public health team and piloted within the COVID-19 Care Homes Team. It was distributed, via email, between the 21st and 29th of January 2021, to care home staff managers whose care homes (n=87) lie within the LCC area. The care home staff managers answered the survey and provided information about the number of permanent staff employed at the home and the number of staff that had not been vaccinated. A list of possible reasons for staff remaining unvaccinated were listed and the number of staff associated with each reason was quantified by the care home managers. These reasons were based on previous research, [13] and local knowledge shared in the weekly LCC care home COVID-19 outbreak meetings. If there were further reasons not listed, respondents had the ability to add new reasons and quantify them. All listed reasons are provided in the results and Table 1. Respondents [care home managers] were asked to describe what they had done to encourage vaccine hesitant staff to get vaccinated and what further assistance they required. All data collated from the survey were analysed descriptively. This service evaluation had no patient and public involvement.

Results

Fifty-three percent (52.8%, n=46) of care home managers in Liverpool responded with results available for analysis. In total, these homes employed 2128 individuals, with a median staff size of 38 (range:6-166). The overall COVID-19 first vaccination rate reported by staff was 52.6% (n=1119), with a mean vaccination rate per care home of 51.4% (95% CI 43.9-58.8%) (Fig 1).

Fifty one percent (51.2%) of care home staff (n=1009) were not vaccinated due to vaccine hesitancy, 39.0% due to logistical issues, and 8.8% due to health concerns (Table 1). The belief that not enough research had been performed into vaccine safety was present in almost all homes (82.6%). Logistical issues impacted over half of care homes. If logistical issues were resolved, the mean vaccination rate could have increased to 69.8% (95% CI 63.2-76.3%) (Fig 1). Health concerns were widespread and were prevalent reasons for not receiving the vaccine. The following fears were reported: the vaccine

affecting fertility; vaccine immunity being short-lived; one could still become sick, or die, despite being vaccinated; and concerns that vaccinations would not stop transmission.

Reported methods to address vaccine hesitancy included: one-on-one meetings to discuss concerns (34.8% of care homes, n=16); staff meetings (15.2%, n=7); provision of educational material (15.2%, n=7); individual discussions with general practitioners or the vaccination team (10.9%, n=5); managers leading by example and encouragement (6.5%, n=3); and reviewing employment law to see whether vaccination could be enforced (2.2%, n=1).

Twenty-six percent (n=12) of care home managers did not want assistance in reducing vaccine hesitancy. The remainder would have liked: health professionals' advice (e.g. forums, one-on-one calls, weekly meetings) (15.2%, n=7); information about the vaccine, including expected side effects (10.9%, n=5); 'myth-busting' material, especially about long-term fertility impact (6.5%, n=3); repeat visits by the vaccination team (2.2%, n=1); a local awareness campaign (2.2%, n=1); and making vaccination compulsory for care home staff (2.2%, n=1).

Discussion

Our evaluation highlights that care home managers' report that vaccine hesitancy and logistical challenges are the main reasons for reduced vaccine uptake amongst care home staff in Liverpool. Conspiracy theories about vaccines were not prevalent or widespread amongst this group of staff. The reported vaccine uptake rate of 52.6% at the date of this survey is concerning. This is comparable to COVID-19 vaccination in American care homes [15].

The social care workforce is predominately female (82%, compared to 47% in the economically active population), and with a higher proportion of Black, Asian and minority ethnic (BAME) individuals (21% vs 14% in England) [19]. This is a similar demographic to the parts of the general population with high levels of COVID-19 vaccine hesitancy [18,20,21,22]. Concerns about the lack of adequate research into vaccine safety were widespread and were the most prevalent reason for non-vaccination. These

mirror concerns of the general population [20,21,22]. Strategies to quell these specific fears need to utilise personal experience alongside expert advice, in order to be successful [23], for example sharing success stories from homes with high vaccine uptake. This could include material about vaccine development, safety profile, and the number of participants in vaccine trials [24,25]. To reduce vaccine hesitancy for all vaccines, staff knowledge and awareness around general vaccine development and licensing process requirements could be improved through training.

The national COVID-19 vaccination roll-out has been a great success in the United Kingdom (UK), but logistical issues resulted in Liverpool's care homes having reduced vaccine uptake. On the assumption that these issues were independent from vaccination hesitancy, then, if resolved, vaccine uptake among staff members would have increased by almost 20%. However, in some homes there would be no discernible increase in vaccine uptake.

Health-associated concerns represented the smallest contributors to reduced vaccine uptake, with pregnancy and fertility associated concerns being widespread. Both vaccines' safety briefs have limited information on this topic [26,27]. The UK government advice is that those who are pregnant and are 'at very high risk of catching the infection or those with clinical conditions that put them at high risk of suffering serious complications from COVID-19 should be vaccinated [28].' Care home staff members would fit within this category and should be encouraged to get vaccinated following a risk assessment. The 'history of allergies' reason was present in around a third of homes. Vaccine-induced anaphylaxis is an extremely rare event, and care home staff should be reassured, utilising the most update information available, that this is an unlikely occurrence (1.3 cases per million doses) [29]. It is important for vaccinators to be clear with staff that "history of allergies" is not the same as "history of anaphylaxis". Emerging data from Moderna and Pfizer suggest that their vaccines have had an anaphylaxis rate of 2.5 and 11.1 cases per million doses respectively [30,31].

Conspiracy theories, such as believing that the vaccine contained microchips, or that they could alter the recipients DNA, were not commonplace and only mentioned in a small number of care homes.

This is good news, because conspiracy theories, or controversies, are more likely to affect the attitudes of people with neutral feelings towards vaccination and make them less willing to get vaccinated [23]. Thus, the influence of such topics maybe minimal within the care home staff population. However, populations with a large proportion of individuals with neutral feelings towards vaccination should be targeted for vaccine campaigns, as they are just as likely swayed to become vaccine acceptant as vaccine hesitant [23]. This same study highlighted that vaccination campaigns can be enhanced by sharing personal experiences of the negative consequences of remaining unvaccinated [23]. Strategies should not rely solely on directly debunking false information, but encourage engagement with health professionals, and the use of publicly visible campaigns that build vaccine confidence and encourage participation through peer pressure.

Limitations

The survey describes self-reported vaccination uptake rates, and views were compiled by one senior member of the care home. It is possible that this may not reflect the views of all staff members. Social desirability bias may be present, however from these data we cannot ascertain the degree of this. We do not know the demographics of the care home staff population and whether any specific risk factors were associated with uptake rates or views on vaccination. This methodology was chosen, rather than surveying all care home staff members, to facilitate speed of survey responses and enable a high response rate. This was so that that LCC could quickly amend and tailor vaccine roll-out strategies and develop campaigns to counter vaccine hesitancy in this population. Parts of the city-wide vaccination campaign that were developed specifically for care home staff included; virtual question and answer sessions led by trusted clinicians from primary care practices and the Liverpool Women's hospital, the offer of access to free taxis to and from a vaccination appointment, the offer of paid time and approved work absences to attend vaccination appointments, and the provision of information about the array of vaccination opportunities that Liverpool offered as part of its campaign [32]. We do not know how representative the views are of care home staff in Liverpool, nor the wider UK care home

staff population. As not all Liverpool care homes responded to the survey, we do not know how over or under-representative vaccine uptake figures were. The reported vaccine uptake rates (52.6%), were higher than what was provided through the National Health Service vaccine tracker to LCC (39.8%) at the time of the survey, however it is noted that the tracker has a delay between individuals receiving the vaccine and the vaccinations being reported [33]. In comparison, the earliest English national data reported was on the 21st of February (a month after the survey) and stated that only 54.2% of care home staff had been vaccinated [33]. It must be remembered that the focus of this survey was to ascertain key reasons for poor vaccination uptake rates rather than to explicitly quantify vaccine uptake rates. The reasons described here could assist not only in maximising vaccination rates in the UK care home staff population, but in this same population in other countries.

Conclusions

The public health emergency and severe consequences of COVID-19 in care homes has led to the rapid administration of vaccines within the care home resident and staff populations – which is an incredible success story. The necessary speed of roll-out has resulted in missed vaccinations due to last minute appointments, and vaccine-related fears could not always be allayed. This work has shown that most vaccine hesitancy in care home staff, as reported by care home managers, is not due to conspiracy driven theories, but due to perceived lack of adequate research into vaccine safety. These reasons could be countered by a multifaceted public health campaign, aimed at both care home staff and the wider public, to emphasise the overwhelming vaccine acceptance in the general population.

Legend

Figure 1. Vaccination uptake rate in Liverpool care home staff. Orange columns represent the self-reported vaccine uptake rates in each home. Blue columns represent potential vaccine uptake rate if only logistical issues are resolved. The solid black line represents the mean vaccine uptake rate. The

dashed black line represents the predicted mean vaccine uptake rate if logistical issues are resolved.

The number above each column equals the total number of staff employed at that home.

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Declaration of Conflict of Interests

All authors attest they meet the ICMJE criteria for authorship. JSPT has been contracted to provide epidemiological support to Liverpool City Council during the COVID-19 pandemic; no other relationships or activities that could appear to have influenced the submitted work. Views expressed are the authors' own.

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Ethics Statement

These data were collected as part of routine public health service evaluation by Liverpool City Council. Fully anonymised data were provided to JT for secondary data analysis. As such, the University of Liverpool ethics department confirmed that review by the University of Liverpool research ethics committee was not needed (see http://www.hra-decisiontools.org.uk/research/docs/DefiningResearchTable_Oct2017-1.pdf).

Data Availability Statement

Data are available upon reasonable request to Liverpool City Council.

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