



Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.

English care home staff morale and preparedness during the Covid pandemic: A longitudinal analysis

Dr. Julii Brainard , Dr Diane Bunn , Ms Laura Watts ,
Dr Anne Killett , Professor Sarah J O'Brien , Professor Iain R Lake ,
Ms. Suzanne Mumford , Dr. Kathleen Lane

PII: S0196-6553(22)00778-7
DOI: <https://doi.org/10.1016/j.ajic.2022.10.009>
Reference: YMIC 6385

To appear in: *AJIC: American Journal of Infection Control*

Please cite this article as: Dr. Julii Brainard , Dr Diane Bunn , Ms Laura Watts , Dr Anne Killett , Professor Sarah J O'Brien , Professor Iain R Lake , Ms. Suzanne Mumford , Dr. Kathleen Lane , English care home staff morale and preparedness during the Covid pandemic: A longitudinal analysis, *AJIC: American Journal of Infection Control* (2022), doi: <https://doi.org/10.1016/j.ajic.2022.10.009>

This is a PDF file of an article that has undergone enhancements after acceptance, such as the addition of a cover page and metadata, and formatting for readability, but it is not yet the definitive version of record. This version will undergo additional copyediting, typesetting and review before it is published in its final form, but we are providing this version to give early visibility of the article. Please note that, during the production process, errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

© 2022 Published by Elsevier Inc. on behalf of Association for Professionals in Infection Control and Epidemiology, Inc.



Highlights

- Good morale and positive attitudes about work were reported by a majority at all time points
- Nonetheless, PPE use and other infection prevention measures were challenging and made the job harder
- Most staff felt well trained and competent to follow recommendations to prevent COVID-19 transmission
- A majority felt there was good support from their managers and colleagues to prevent COVID-19

Journal Pre-proof

English care home staff morale and preparedness during the Covid pandemic: A longitudinal analysis

Dr. Julii Brainard^{1,2} * Orcid# 0000-0002-5272-7995

Dr Diane Bunn¹ Orcid# **0000-0002-7809-7100**

Ms Laura Watts¹ Orcid#0000-0002-1816-966X

Dr Anne Killett¹ Orcid# 0000-0003-4080-8365

Professor Sarah J O'Brien³ Orcid# 0000-0003-2896-8999

Professor Iain R Lake⁴ Orcid# 0000-0003-4407-5357

Ms. Suzanne Mumford⁵

Dr. Kathleen Lane¹ Orcid# **0000-0003-0759-6321**

¹ School of Health Sciences, University of East Anglia Norwich NR4 7TJ, UK

² Norwich Medical School, University of East Anglia Norwich NR4 7TJ, UK

³ School of Natural and Environmental Sciences, Newcastle University Newcastle upon Tyne NE1 7RU, UK

⁴ School of Environmental Sciences, University of East Anglia Norwich NR4 7TJ, UK

⁵ Care UK, Connaught House, 850 The Crescent, Business Park, Colchester Essex UK

* **Corresponding author:** j.brainard@uea.ac.uk, tel. +44-1603-591151. Postal Address as above

Running title: Care home staff morale and preparedness during the Covid pandemic

Word and other Counts: Main manuscript: ~3500. 5 tables, ~38 references, ~220 words in abstract; 6 supplemental files

Conflict of interest

All authors declare that we have no conflict of interest.

Ethical approval

Ethical approval for this study was granted by the University of East Anglia Faculty of Medicine and Health Ethics Committee (References: 2021-148, 2021-038, 2122-0825 and 2122-1098).

Acknowledgements

We thank the care workers who piloted the surveys. Charlotte Salter helped with data collection in Wave 1. Member of our UCAIRE Advisory group Julie Houghton (public advisor) helped shape the survey format and commented on earlier version of this manuscript.

Funding

This work was funded by the National Institute for Health Research (NIHR) School for Social Care Research (SSCR, award 102645/ER/UEAKL-P178), the NIHR Health Protection Research Unit (NIHR HPRU) in Emergency Preparedness and Response at King's College London in partnership with the UK Health Security Agency (UKHSA), and the National Institute for Health Research Applied Research Collaboration East of England (ARC EoE) in collaboration with the University of East Anglia. The views expressed are those of the author(s) and not necessarily those of the NHS, NIHR, SSCR, ARC EoE, UEA, UK Department of Health or UKHSA.

Author contributions:

KL, DB, IL, AK, SO and SM secured funding. All authors contributed to survey design. KL, DB, JB and LW designed advertisements and coordinated recruitment advertisements which were further

amplified and redistributed by JB, DB, AK and SM. DB, JB, IL, KL and SO designed analysis. JB managed the survey platform, extracted and cleaned data. JB wrote the first draft, undertook statistical analysis and assembled revisions with comments from all authors. All authors approve of this manuscript.

Journal Pre-proof

Abstract

BACKGROUND

Staff actions to prevent infection introduction and transmission in long-term care facilities (LTCFs) were key to reducing morbidity and mortality from COVID-19. Implementing infection control measures (ICMs) requires training, adherence and complex decision making while trying to deliver high quality care. We surveyed LTCF staff in England about their preparedness and morale at three timepoints during the COVID-19 epidemic.

METHODS

Online structured survey targeted at LTCF workers (any role) administered at three timepoints (November 2020-January 2021; August-November 2021; March-May 2022). Narrative summary of answers, narrative and statistical summary (proportionality with Pearson's chi-square or Fisher's Exact Test) of possible differences in answers between waves.

RESULTS

Across all three survey waves, 387 responses were received. Morale, attitudes towards working environment and perception about colleague collaboration were mostly positive at all survey points. Infection control training was perceived as adequate. Staff felt mostly positive emotions at work. The working environment remained challenging. Masks were the single form of PPE most consistently used; eye protection the least used. Mask-wearing was linked to poorer communication and resident discomfort as well as mild negative health impacts on many staff, such as dehydration and adverse skin reactions. Hand sanitiser caused skin irritation.

CONCLUSIONS

Staff morale and working practices were generally good even though the working environment provided many new challenges that did not exist pre-pandemic.

Keywords: Infection control measures ; COVID-19; long-term care facility; Personal Protective Equipment

Introduction

Advanced age is the risk factor most associated with morbidity or mortality caused by COVID-19^{1,2}. About 4% of all persons age 65+ and 15% of persons age 85+ in the United Kingdom (UK) live in a residential long-term care facility (LTCF)³. It became clear early in the COVID pandemic that such residential facilities would become high-risk settings for COVID morbidity and/or mortality^{4,5}. In

response, the UK government pledged to “throw a protective ring” around LTCFs to keep residents safe. How effectively this promise was realised has been much scrutinised⁶⁻⁹.

COVID caused long-existing problems in the long-term care sector to come into sharp focus¹⁰. LTCF staff had the simultaneous challenge of maintaining LTCFs as *homes* for persons with high care needs, whilst implementing infection prevention and control (IPC) measures for an unfamiliar disease. Staff had to acquire new skills¹¹ and change working practices¹², almost daily, as official IPC guidance was developed by many different regulatory bodies and was revised frequently^{9,13}. These changes happened to a workforce where staff shortages and high turnover are common, pay is relatively low¹⁴, many have insecure employment contracts and poor career development or training opportunities¹⁵. Recruitment difficulties are chronic in the care sector¹⁶. The work can be physically demanding and is organised in long shifts. The British care sector as a whole is long considered to be under-funded and under-resourced with complex governance that leads to entrenched inefficiencies in multiple domains and poor strategic understanding⁸. Nonetheless, the social care workforce has steadily grown since 2012, comprising an estimated 1.54 million persons in the UK in 2021¹⁴.

Three times between late 2020 and early 2022, we administered a structured survey to British LTCF staff about their working environment (author names suppressed, 2021). Questions focused on aspects of their morale (feelings and attitudes related to their work) and their IPC challenges and practices. Monitoring LTCF staff morale was a major concern in the UK COVID epidemic; it was widely acknowledged that effective IPC in LTCFs was very reliant on the efforts and goodwill of staff^{13,17}. Concurrently, responsibility for health policy and COVID response was devolved to each constituent UK nation. Our survey respondents in all three waves overwhelmingly came from individuals based in England hence we subsequently describe the results with reference to the concurrent COVID epidemic and regulatory context in England. These data enable us to report a longitudinal analysis of LTCF staff morale and work practices during the first two years of the COVID epidemic in England.

Methods

For each of the three surveys, we aimed to recruit staff working in any role in LTCFs for older people. We advertised nationally using social media (Facebook, Twitter), e-newsletters aimed at LTCF staff, professional and practitioner contacts and distribution lists. The survey was advertised at least twice for each wave on each channel (Facebook, Twitter, each of two possible departmental bulletins, and

18 professional contacts/distribution lists on email, many of whom cascaded the advert downwards through other networks). Facebook and Twitter adverts originating from our university departments were retweeted by ourselves, collaborators and other colleagues and professional contacts. We advertised the survey in university departments because many students undertake care work as part of work experience, training and for income. Wave 1 was conducted 24 Nov 2020 to 31 Jan 2021; Wave 2: 1 August-30 Nov 2021 and Wave 3: 1 March-15 May 2022. Wave 1 advertisement was especially amplified (retweets, shares, shared with additional professional networks) by the NIHR Health Protection Unit in Emergency Preparedness.

Ethical approval for this study was granted by the suppressed name (2020-2022). Survey questions were developed with public and participant involvement (PPI) and input from an Advisory Group. Advisors were recruited through professional and personal contact networks and commented on question understandability, appropriateness, and speed of survey completion. PPI advisors (n=3) included junior LTCF staff (not otherwise involved in the research) and a colleague with recent experience as a healthcare assistant in hospitals. Members of the Advisory Group (n= 5) had concurrent experiences of having relatives in a LTCF, as director of a national care provider and working as an advanced nurse practitioner or epidemiologist supporting LTCFs in outbreak response.

For Wave 1, survey questions were informed by the Queen's Nursing Institute survey (Queen's Nursing Institute, 2020), a survey on PPE adherence¹⁸, our own previous experience writing surveys (author names suppressed, 2020) and feedback from current LTCF staff. Some minor changes in exact question wording and answer options were made between survey waves following discussions within the research team and Advisory Group about concurrent information needs. Questions were about

demographic information (gender, age-band, ethnicity in waves 2 and 3);

employment (UK region of workplace, job role(s), years of experience working in LTCFs, shifts per week, how many LTCFs worked in during previous four months, additional employment where personal care may have been given);

habitual usage of personal protective equipment (PPE);

practical challenges when using PPE, IPC training; and

morale and feelings

Specific between-wave variations in questions were asking about “eye protection” (Wave 1) while Wave 2-3 respondents were asked about goggles and face shields. This revision was made because we became more aware of the variety of eye protection available. The option to “neither agree or disagree” was removed from the second and third surveys for IPC and PPE challenges to try to reduce survey length and prompt participants to make a more interpretable answer. Respondents in Waves 2 and 3 (but not 1) were asked about training in IPC, dehydration possibly linked to use of PPE, and had the option of leaving an open text response about any aspects of IPC they wished to comment on.

LTCF staff often have multiple recent roles on different shifts, such as kitchen work one day and care work another. We therefore identified summary job categories: persons who had worked as senior care workers or managers at least sometimes, persons who had delivered personal care but never as a senior/manager; persons who never delivered personal care. It is important to say that senior care workers are still care workers providing care work, as well as having a much wider range of duties and responsibility, including for operational decisions and facility administration. Previously (Wave 1 ; author names suppressed 2021) we stratified responses by these three predominant job categories, age groupings and gender, but found relatively little variation in Wave 1 responses between these groups so do not stratify by demographic traits in this longitudinal analysis.

We offered a small reward (digital shopping voucher) to make the survey more appealing to a low-paid, hard-to-reach demographic. Responses to all three waves were checked carefully for ‘fake respondent’ (“Bot”) answers. Attention check questions were included in all waves. The attention check question was adequate to identify possibly inattentive or insincere respondents in Wave 1, but in Wave 2 many Bot respondents answered the attention check question correctly. The Wave 3 survey therefore had an additional question that required cognition skills that we hoped would help identify automated false answers. We found with each wave that Bot algorithms improved and made it harder to identify these simulated answers. This accords with other recent experiences of weeding out Bot answers in public, online surveys (the Bots get better at evading detection over time)^{19,20}. Our quality control to remove false respondents was multi-stage. Briefly, in addition to failing attention check and/or cognitive check questions, we found that many Bot open-text answers were written in non-sensical slogans. Bot answers were also identified and removed for being in obvious time clusters and having identical format contact details, including strange email addresses (with distinctive format patterns). More details about the steps we had took to remove false responses in Waves 2 and 3 are described elsewhere (author names suppressed 2021).

The survey questions are available as supplemental file 1 (Wave 3 version). The open text comments and statistics drawn from the survey questions are reported here in narrative summary and between wave narrative and statistical comparisons. Statistical comparisons were undertaken in Stata version 17.0, using tests for proportionality, either Pearson's chi-squared or Fisher's Exact Test (FET). FET is appropriate instead of Pearson chi-square when one or more cell counts are below 5. Comparisons were between any two waves (e.g., Wave 1 versus Wave 2 or Wave 3, and Wave 2 versus Wave 3 distribution of answers). For one set of questions (about IPC challenges) slightly agree / neither agree nor disagree / slightly disagree answer counts were pooled in the proportionality statistical tests. Statistical comparisons with p-value < 0.05 were considered significantly different and are highlighted in results.

Results

Answer counts were Wave 1: 238, Wave 2: 115, Wave 3: 34. A definitive response rate to each Wave is impossible to estimate because of the social media/newsletter nature of the advertising, however it seems likely that a large number of persons were exposed to the advertising but did not fill in the survey and thus the response rate in all waves was relatively low. Counts of weekly survey respondents is shown in the figure in supplemental file 2, where we also show concurrent weekly count in England of deaths within 28 days of a COVID+ test, and time points when four variants of concern (VoC: alpha, delta and omicron 1 and 2) became dominant among sequenced swab samples of COVID-positive patients. Relevant to when the survey waves were answered, information about COVID mortality in England (where overwhelming majority of respondents were located) and VoC were much publicised via daily announcements and probably influenced public mood as well as IPC guidelines that LTCF staff had to implement.

Table 1 shows demographic information for the survey respondents in each wave. Respondents were mostly female and had at least 5 years experience working in LTCFs. This compares to average years of experience in the social care sector being nine¹⁴. Representation of staff with \geq five years experience working in homes declined between Waves, and was significantly different between Wave 1 and Wave 3. The percentages of respondents who had worked at least 5 shifts/week was significantly higher in the first than second or third waves, from 68% to 59% or 38%. This reduction in full time LTCF staff may correspond to staff shortages at the height of the pandemic, or with other job opportunities as COVID-related restrictions were increasingly lifted in the UK from early 2021 onwards and national labour shortages that arose in late 2021²¹. Managers/senior care workers were the largest occupational group in each wave, but significantly more respondents were senior

care workers or manager in the first survey wave than in subsequent waves. Significantly more staff reported working in multiple LTCFs in the 2021-22 surveys than in the (first) 2020-21 survey. A minority, but rising-over-time, percentage of respondents had paid or volunteer work with other types of vulnerable people (not LTCFs), from 16% to 32%. This proportional difference was only significantly different between first and third survey Waves. Common examples of other settings where respondents worked or volunteered were hospitals, hospices, rehabilitation centres, (pre)schools and on student placements. Supplemental file 3 lists other settings and contexts where respondents described working/volunteering in a way that involved providing personal care, in addition to their paid roles in the LTCF sector.

Geographic distributions of respondent locations are shown in the figure in supplemental file 4. Most respondents in all waves came from southern and eastern England, with very little representation outside of England. Between 44% and 53% of respondents were age 45 and under, which concords well with recent estimates that the average age of staff in the care sector is 44 years¹⁴. The distributions of respondent ages were significantly different between the first and second or third survey Waves, although the differences are not simple (such as generally older or younger).

Table 1. Demographic traits of survey respondents: n, %

| | Wave 1, $\Sigma=238$ | Wave 2, $\Sigma=115$ | Wave 3, $\Sigma=34$ |
|--|----------------------|----------------------|---------------------|
| Female ^{X,F} | 199, 84%* | 88, 77%* | 30, 88% |
| White British ^X | na | 95, 83% | 29, 88% |
| Worked in LTCF \geq 5 years ^X | 171, 72%* | 71, 62% | 18, 53%* |
| Worked 5+ LTCF shifts/week ^X | 162, 68%** | 68, 59% | 13, 38% |
| Worked in any other LTCF ^X | 18, 8%** | 20, 18% | 9, 26% |
| Recent paid or volunteer work in other (not CH) settings with vulnerable people ^X | 38, 16%* | 22, 19% | 11, 32%* |
| Age ^F | | | |
| 18-25 years | 44, 18%** | 13, 11% | 4, 12% |
| 26-35 years | 22, 9% | 22, 19% | 13, 38% |
| 36-45 years | 39, 16% | 23, 20% | 1, 3% |
| 46-55 years | 62, 26% | 34, 30% | 11, 32% |
| 56-65 years | 62, 26% | 21, 18% | 5, 15% |
| age 65+ | 9, 4% | 2, 2% | 0, 0% |
| Job Roles ^X | | | |
| Senior/Manager sometimes | 164, 69%** | 64, 56% | 15, 44% |
| Junior CW, never senior/manager | 53, 22%** | 32, 28% | 10, 29% |
| Other LTCF staff | 21, 9% | 19, 16% | 9, 26% |

Notes: na : not available, question was not posed in that survey wave. * : significantly different from one other survey wave at threshold $p < 0.05$; ** : significantly different from 2 other waves. Superscripts denote between group test applied to look for significant difference between any two survey waves. ^F Fisher Exact Test, ^X Chi-square test.

Feelings

Table 2 shows percentages of respondents that reported frequency of experiencing specific feelings recently at work, separated by survey wave. There is a great deal of consistency in how much respondents reported having each feeling. Being tired was common and few agreed that they felt energised. Only a minority tended to report especially negative emotions (scared, anxious, angry) often or constantly. A majority of respondents were often or constantly happy, satisfied or feeling rewarded in all three survey waves. There was no statistically significant difference between survey Waves.

Table 2. Frequency of specific feelings experienced recently at work: n, %

| | | | | | | | |
|---------------------------------|----------|---------|---------|-------------------------------|----------|---------|---------|
| <i>Satisfied</i> ^{F,X} | W1 | W2 | W3 | <i>Angry</i> ^F | W1 | W2 | W3 |
| <u>Constantly</u> | 24, 10% | 12, 10% | 3, 9% | <u>Constantly</u> | 3, 1% | 3, 3% | 0, 0% |
| <u>Often</u> | 111, 47% | 52, 45% | 17, 50% | <u>Often</u> | 44, 19% | 19, 17% | 8, 24% |
| <u>Sometimes</u> | 89, 37% | 45, 39% | 14, 41% | <u>Sometimes</u> | 108, 46% | 68, 59% | 16, 47% |
| <u>Not at all</u> | 14, 6% | 6, 5% | 0, 0% | <u>Not at all</u> | 81, 34% | 25, 22% | 10, 29% |
| <i>Relaxed</i> ^F | W1 | W2 | W3 | <i>Tired</i> ^F | W1 | W2 | W3 |
| <u>Constantly</u> | 3, 1% | 3, 3% | 2, 6% | <u>Constantly</u> | 51, 22% | 30, 26% | 9, 26% |
| <u>Often</u> | 68, 29% | 32, 28% | 11, 32% | <u>Often</u> | 114, 48% | 52, 45% | 14, 41% |
| <u>Sometimes</u> | 120, 50% | 54, 47% | 12, 35% | <u>Sometimes</u> | 65, 28% | 29, 25% | 10, 29% |
| <u>Not at all</u> | 45, 19% | 26, 23% | 9, 26% | <u>Not at all</u> | 8, 3% | 4, 3% | 1, 3% |
| <i>Happy</i> ^{F,X} | W1 | W2 | W3 | <i>Scared</i> ^{F,X} | W1 | W2 | W3 |
| <u>Constantly</u> | 9, 4% | 10, 9% | 4, 12% | <u>Constantly</u> | 19, 8% | 7, 6% | 2, 6% |
| <u>Often</u> | 125, 53% | 52, 45% | 17, 50% | <u>Often</u> | 43, 18% | 21, 18% | 3, 9% |
| <u>Sometimes</u> | 96, 40% | 47, 41% | 12, 35% | <u>Sometimes</u> | 112, 47% | 47, 41% | 19, 56% |
| <u>Not at all</u> | 6, 3% | 6, 5% | 1, 3% | <u>Not at all</u> | 64, 27% | 40, 35% | 10, 29% |
| <i>Rewarded</i> ^{F,X} | W1 | W2 | W3 | <i>Sad</i> ^{F,X} | W1 | W2 | W3 |
| <u>Constantly</u> | 64, 27% | 26, 23% | 6, 18% | <u>Constantly</u> | 13, 6% | 5, 4% | 0, 0% |
| <u>Often</u> | 103, 43% | 42, 37% | 18, 53% | <u>Often</u> | 66, 28% | 33, 29% | 8, 24% |
| <u>Sometimes</u> | 61, 26% | 42, 37% | 10, 29% | <u>Sometimes</u> | 127, 54% | 60, 52% | 22, 65% |
| <u>Not at all</u> | 10, 4% | 5, 4% | 0, 0% | <u>Not at all</u> | 32, 14% | 17, 15% | 4, 12% |
| <i>Energised</i> ^{F,X} | W1 | W2 | W3 | <i>Anxious</i> ^{F,X} | W1 | W2 | W3 |
| <u>Constantly</u> | 12, 5% | 5, 4% | 2, 6% | <u>Constantly</u> | 27, 11% | 12, 10% | 3, 9% |
| <u>Often</u> | 62, 26% | 34, 30% | 9, 26% | <u>Often</u> | 61, 26% | 28, 24% | 11, 32% |
| <u>Sometimes</u> | 120, 50% | 51, 44% | 18, 53% | <u>Sometimes</u> | 120, 51% | 57, 50% | 18, 53% |
| <u>Not at all</u> | 44, 18% | 25, 22% | 5, 15% | <u>Not at all</u> | 28, 12% | 18, 16% | 2, 6% |

Notes: Superscripts denote between group test(s) applied to look for significant difference between any two survey waves. ^F Fisher Exact Test, ^X Chi-square test.

Morale and attitudes

Table 3 indicates agreement respondents had with specific aspects of morale and IPC issues at their workplace. Most were inclined to remain working in the care sector and did not contemplate working for a different LTCF, although the proportions were sometimes significantly different between Waves. Over time, there was a non-significant declining appetite to see IPC measures increase, and significant difference between first and second wave with regard to desire to see reduced IPC measures at the LTCF. A majority of respondents found their job challenging but satisfying often or constantly. A majority reported that they worked well with colleagues to prevent

COVID most of the time and most felt that their manager had been supportive often or constantly. Although the strength of perceived manager support declined over time, it was not significantly different between survey waves.

IPC Challenges

We asked about specific challenges that staff might face when implementing IPC measures or that could undermine their commitment to maintain IPC measures, such as if wearing masks gave them skin problems, or if they felt frustrated by people who didn't socially distance. Results are in Table 4.

There were only significant differences (at $p < 0.05$) in the answers about normal social life (for respondent) and frustration about other people not social distancing adequately, specifically between Wave 1 and Waves 2 and/or 3. Respondents felt more strongly that their social life could not be normal and felt more frustration with others for their lack of social distancing in Wave 1 than in subsequent waves. This result maybe reflects concurrent COVID epidemic control measures and awareness of COVID-linked mortality (indicated by information in supplemental file 2). The answers otherwise show much consistency in each survey wave. Using PPE hindered communication and interfered with aspects of the job at least sometimes in all waves. A majority of respondents at least somewhat agreed that residents were alarmed by staff wearing PPE. Hand sanitiser and mask-wearing were perceived to cause skin problems in a majority of respondents. Most respondents associated mask-wearing with not drinking enough fluids (only asked in survey Waves 2 and 3).

| <i>Not working in LTCFs any more</i> ^X | | | | <i>Getting LTCF to reduce IPC</i> ^F | | | |
|---|-----------------|---------|----------------|--|-----------------|----------------|---------|
| | W1* | W2 | W3* | | W1* | W2* | W3 |
| <u>Constantly</u> | 11, 5% | 8, 7% | 6, 18% | <u>Constantly</u> | 3, 1% | 3, 3% | 0, 0% |
| <u>Often</u> | 34, 14% | 14, 12% | 8, 24% | <u>Often</u> | 5, 2% | 7, 6% | 2, 6% |
| <u>Sometimes</u> | 76, 32% | 50, 43% | 9, 26% | <u>Sometimes</u> | 27, 11% | 20, 17% | 7, 21% |
| <u>Not at all</u> | 117, 49% | 43, 37% | 11, 32% | <u>Not at all</u> | 203, 85% | 85, 74% | 25, 74% |

| <i>Finding a different LTCF to work at</i> ^F | | | | <i>This job isn't easy but it can be satisfying</i> ^F | | | |
|---|-----------------|----------------|---------|--|----------|---------|---------|
| | W1* | W2* | W3 | | W1 | W2 | W3 |
| <u>Constantly</u> | 2, 1% | 2, 2% | 2, 6% | <u>Constantly</u> | 64, 27% | 22, 19% | 8, 24% |
| <u>Often</u> | 8, 3% | 7, 6% | 2, 6% | <u>Often</u> | 113, 47% | 57, 50% | 16, 47% |
| <u>Sometimes</u> | 35, 15% | 29, 25% | 7, 21% | <u>Sometimes</u> | 54, 23% | 34, 30% | 9, 26% |
| <u>Not at all</u> | 193, 81% | 77, 67% | 23, 68% | <u>Not at all</u> | 7, 3% | 2, 2% | 1, 3% |

| <i>My colleagues and I are all working well together to prevent COVID</i> ^F | | | | <i>My manager has been supportive</i> ^{F,X} | | | |
|--|----------|---------|---------|--|----------|---------|---------|
| | W1 | W2 | W3 | | W1 | W2 | W3 |
| <u>Constantly</u> | 139, 58% | 65, 57% | 16, 47% | <u>Constantly</u> | 129, 54% | 55, 48% | 13, 38% |
| <u>Often</u> | 82, 34% | 39, 34% | 15, 44% | <u>Often</u> | 70, 29% | 34, 30% | 11, 32% |
| <u>Sometimes</u> | 14, 6% | 10, 9% | 3, 9% | <u>Sometimes</u> | 26, 11% | 18, 16% | 7, 21% |
| <u>Not at all</u> | 3, 1% | 1, 1% | 0, 0% | <u>Not at all</u> | 13, 5% | 8, 7% | 3, 9% |

| <i>Getting LTCF to increase IPC</i> ^{F,X} | | | |
|--|----------|---------|---------|
| | W1 | W2 | W3 |
| <u>Constantly</u> | 16, 7% | 8, 7% | 1, 3% |
| <u>Often</u> | 23, 10% | 13, 11% | 7, 21% |
| <u>Sometimes</u> | 50, 21% | 34, 30% | 10, 29% |
| <u>Not at all</u> | 149, 63% | 60, 52% | 16, 47% |

Notes: * : significantly different from one other survey wave at threshold $p < 0.05$; ** : significantly different from 2 other waves. Superscripts denote between group test applied to look for significant difference between any two survey waves. ^F Fisher Exact Test, ^X Chi-square test.

| <i>Wearing PPE harder to give physical care to residents</i> ^X | | | | <i>Residents are alarmed by staff wearing PPE</i> ^{F,X} | | | |
|--|----------|---------|---------|---|-----------------|---------|---------|
| | W1 | W2 | W3 | | W1 | W2 | W3 |
| <u>Strongly agree</u> | 48, 21% | 17, 15% | 7, 21% | <u>Strongly agree</u> | 27, 11% | 15, 13% | 2, 6% |
| <u>Somewhat agree</u> | 93, 40% | 47, 41% | 10, 29% | <u>Somewhat agree</u> | 81, 34% | 45, 39% | 17, 50% |
| <u>Neither</u> | 34, 15% | na | na | <u>Neither</u> | 54, 23% | na | na |
| <u>Somewhat disagree</u> | 25, 11% | 36, 31% | 9, 26% | <u>Somewhat disagree</u> | 44, 18% | 40, 35% | 11, 32% |
| <u>Strongly disagree</u> | 33, 14% | 15, 13% | 8, 24% | <u>Strongly disagree</u> | 32, 13% | 15, 13% | 4, 12% |
| <i>Wearing PPE harder to communicate with residents or colleagues</i> ^F | | | | <i>Feeling frustrated about too little social distancing by others</i> ^{F,X} | | | |
| | W1 | W2 | W3 | | W1** | W2 | W3 |
| <u>Strongly agree</u> | 140, 60% | 56, 49% | 19, 56% | <u>Strongly agree</u> | 118, 50% | 18, 16% | 5, 15% |
| <u>Somewhat agree</u> | 77, 33% | 38, 33% | 9, 26% | <u>Somewhat agree</u> | 70, 29% | 25, 22% | 15, 44% |
| <u>Neither</u> | 6, 3% | na | na | <u>Neither</u> | 24, 10% | na | na |
| <u>Somewhat disagree</u> | 6, 3% | 17, 15% | 3, 9% | <u>Somewhat disagree</u> | 12, 5% | 63, 46% | 10, 29% |
| <u>Strongly disagree</u> | 6, 3% | 4, 3% | 3, 9% | <u>Strongly disagree</u> | 11, 5% | 19, 17% | 4, 12% |
| <i>Hand sanitiser irritates my hands</i> ^{F,X} | | | | <i>My normal social life isn't possible right now</i> ^{F,X} | | | |
| | W1 | W2 | W3 | | W1** | W2 | W3 |
| <u>Strongly agree</u> | 48, 21% | 22, 19% | 7, 21% | <u>Strongly agree</u> | 135, 57% | 28, 24% | 11, 32% |
| <u>Somewhat agree</u> | 79, 34% | 23, 20% | 13, 38% | <u>Somewhat agree</u> | 54, 23% | 42, 37% | 7, 21% |
| <u>Neither</u> | 39, 17% | na | na | <u>Neither</u> | 23, 10% | na | na |
| <u>Somewhat disagree</u> | 26, 11% | 41, 36% | 10, 29% | <u>Somewhat disagree</u> | 12, 5% | 34, 30% | 12, 35% |
| <u>Strongly disagree</u> | 44, 19% | 29, 25% | 4, 12% | <u>Strongly disagree</u> | 13, 5% | 11, 10% | 4, 12% |
| <i>Mask-wearing gives me skin problems</i> ^X | | | | <i>Mask wearing means I don't drink enough fluids at work</i> ^F | | | |
| | W1 | W2 | W3 | | W1 | W2 | W3 |
| <u>Strongly agree</u> | 65, 28% | 33, 29% | 8, 24% | <u>Strongly agree</u> | na | 32, 28% | 14, 41% |
| <u>Somewhat agree</u> | 69, 30% | 29, 25% | 14, 41% | <u>Somewhat agree</u> | na | 42, 37% | 10, 29% |
| <u>Neither</u> | 32, 14% | na | na | <u>Neither</u> | na | na | na |
| <u>Somewhat disagree</u> | 29, 12% | 29, 25% | 7, 21% | <u>Somewhat disagree</u> | na | 24, 21% | 7, 21% |
| <u>Strongly disagree</u> | 43, 18% | 24, 21% | 5, 15% | <u>Strongly disagree</u> | na | 17, 15% | 3, 9% |

Notes: na means the response option wasn't available in that survey wave. * : significantly different from one other survey wave at threshold $p < 0.05$; ** : significantly different from 2 other waves. Superscripts denote between group test applied to look for significant difference between any two survey waves. ^F Fisher Exact Test, ^X Chi-square test.

Preparedness

In survey Waves 2 and 3, by the time they had worked four shifts independently at the LTCF, we asked specifically about how well staff felt that they had been trained to use PPE and in general were prepared to follow recommended procedures to prevent COVID infections (results in Table 5). Most staff strongly agreed at both survey points that they were working in an environment that supported correct procedures and use of PPE, they had had enough training, and they were able to follow recommended procedures. Agreement that they had received enough training by the time they worked four shifts independently was significantly lower in Wave 3 than Wave 2. With respect to other aspects of IPC training in Table 5, there were no significant differences between survey Waves 2 and 3.

Table 5. Preparedness for IPC by the time respondent had worked four shifts independently : n, %

| | <i>I had received enough training in how to prevent COVID infection</i> | | <i>I believed that I could do my job well and follow all the recommended procedures to prevent transmission of COVID</i> | |
|--------------------------|---|----------------|--|---------|
| | W2* | W3* | W2 | W3 |
| <u>Strongly agree</u> | 80, 70% | 17, 50% | <u>Strongly agree</u> | 79, 69% |
| <u>Somewhat agree</u> | 24, 21% | 16, 47% | <u>Somewhat agree</u> | 28, 24% |
| <u>Somewhat disagree</u> | 5, 4% | 1, 3% | <u>Somewhat disagree</u> | 3, 3% |
| <u>Strongly disagree</u> | 6, 5% | 0, 0% | <u>Strongly disagree</u> | 5, 4% |
| | | | | |
| | <i>I knew how to put PPE on</i> | | <i>Everything was set up well in my LTCF to make donning and doffing PPE happen correctly</i> | |
| | W2 | W3 | W2 | W3 |
| <u>Strongly agree</u> | 86, 75% | 25, 74% | <u>Strongly agree</u> | 79, 69% |
| <u>Somewhat agree</u> | 21, 18% | 8, 24% | <u>Somewhat agree</u> | 23, 20% |
| <u>Somewhat disagree</u> | 6, 5% | 1, 3% | <u>Somewhat disagree</u> | 9, 8% |
| <u>Strongly disagree</u> | 2, 2% | 0, 0% | <u>Strongly disagree</u> | 4, 3% |
| | | | | |
| | <i>I knew how to take PPE off</i> | | | |
| | W2 | W3 | | |
| <u>Strongly agree</u> | 85, 74% | 26, 76% | | |
| <u>Somewhat agree</u> | 23, 20% | 7, 21% | | |
| <u>Somewhat disagree</u> | 5, 4% | 1, 3% | | |
| <u>Strongly disagree</u> | 2, 2% | 0, 0% | | |

Notes: * : significantly different from other survey wave at threshold $p < 0.05$. Test applied to look for significant difference between these two survey waves was always Fisher Exact Test.

Habitual PPE use

Supplemental file 5 shows frequency that staff reported using specific types of PPE. In Waves 2 and 3 we expanded the eye protection question to be more specific, goggles or faceshields. It is apparent that the PPE strategy was heavily reliant on face masks and sanitiser. Gloves were very common while forms of eye protection were only used by a minority. Proportionally, there were no significant between survey Wave differences in answers to these questions.

Comments about Infection Prevention and Control

Respondents were invited in survey waves 2 and 3 to make additional comments about IPC in their work environment. These verbatim comments will be thematically analysed and integrated into a separate qualitative analysis of LTCF staff interview comments that we collected in parallel (author names suppressed, in preparation); the survey comments are included as supplemental file 6. These comments tend to address working practices, training, risks from visitors returning, compliance with guidelines and physical infrastructure. The comments were diverse, specific and often candid.

Discussion

With respect to the demographic traits in Table 1, Wave 1 respondents were different from those who replied in survey Waves 2 and 3. These differences suggest variations in recruitment between each wave. As a result of these demographic variations as well as the fairly small number of replies to the third survey Wave, although we report on between Wave differences, we cannot be confident that implied changes over time are generalisable to the wider LTCF workforce.

We feel more confident that findings that were consistent in all three waves are likely to be generalisable. We were surprised at the level of positivity that respondents felt about their working environment, given the often-cited disappointing pay, poor career or training opportunities and low social status of social care jobs. This positivity also emerged in analysis of staff interview data we collected in parallel and that will be described separately. It seems that indeed, this workforce does the job for satisfaction as much as pecuniary reward²².

We note that the survey waves started about 8 months after COVID arrived in the UK, by which time IPC training regimes should have been well established and most staff could report they felt mostly prepared and competent at implementing IPC measures soon after they started working independently. Nevertheless, IPC practices were reported to add many challenges to the work,

especially with regard to dehydration, skin discomforts, communication and maintaining a safe atmosphere for residents.

Our survey indicates subjective feelings of wellbeing at the point of time when respondents answered. We did not assess prevalence of mental health issues. There are many research studies that assessed prevalence of likely mental health problems in social care staff – after the COVID pandemic started²³⁻²⁵. For instance, Greene et al. (2021)²⁶ found that among UK LTCF staff surveyed in May-July 2020, 57.9% met criteria for having clinically significant distress. For comparison, a 2017 study about American nursing home staff found a 26% prevalence of depression among nursing home staff²⁷. We have not located equivalent research about pre-pandemic prevalence of mental health problems in the UK social care workforce, although the *Retention and Sustainability of Social Care Workforce* (RESSCW) project (<https://www.pssru.ac.uk/resscw/frontpage/>) which operated 2019-2022 was established to better understand wellbeing in the UK social care workforce. General wellbeing has been described (as poor) in this occupational group before 2020, and directly linked to their low pay, poor training opportunities and low social status²².

It seems likely that LTCF staff wellbeing and support to undertake effective IPC have fluctuated during the pandemic, and indeed responses were very sensitive to country-specific factors and exactly when workers were canvassed. For instance, mental and physical wellbeing was reported as worse or much worse than usual by most (57%) respondents in a survey of registered nurses who worked in UK care homes in April-March 2020, while 35% said that they did not always have access to appropriate PPE²⁸. We did not survey so early in the pandemic and did not have similar findings. Closer to our own survey dates is an online survey of 1047 social care workers in April-June 2021 for the RESSCW project²⁹. In the few weeks prior to filling in the survey, 40% of respondents said their job made them feel cheerful most or all of the time, but 39% also said their job made them feel tense all or most of the time. Only 51% were satisfied with their work-life balance. Worryingly, 26% of RESSCW respondents had experienced abuse related to the COVID pandemic (such as threats, bullying and violence). That working in a LTCF during the pandemic had mixed positive and negative impacts on wellbeing is similar to our own findings, although we did not ask about abuse experiences.

There is, nonetheless, optimism that conditions may improve for social care staff in that the COVID experience increased appreciation of this key worker group³⁰⁻³². An abundance of clearly documented links between mental health outcomes in the workforce with their increasingly obvious

role in protecting residents and how management decisions can support staff morale²⁶ should help to improve public regard for social care work. The postulated link between working conditions and COVID outbreaks in LTCFs is supported by evidence that English LTCFs with more secure access to PPE had fewer COVID cases and deaths among residents in April 2020³³, while Shallcross *et. al.*³⁴ found evidence in a large survey (5126 responses) of English care home managers in May-June 2020 that LTCFs that provided sick pay, had higher staff ratios and fewer agency staff had fewer COVID infections among residents.

There was much concern early in the pandemic that COVID was spreading directly *between* LTCFs, a concern supported by evidence that distinctive genomic strains were over-represented in LTCFs³⁵. Direct, between-home spread could arise due to reliance on agency staff or simply the high turnover and insecurity of jobs in the care sector: an individual might understandably have multiple concurrent employment LTCF contracts. From March to November 2021, English LTCFs were required to try to prevent staff in caring roles from working in multiple LTCFs³⁶. It was also plausible that a high rate of physical and social contact in other settings could mean higher transmission risk ultimately into LTCFs. It is therefore useful to document work practices in multiple LTCFs and in other care settings – and which types of settings. There was much variety in other settings where our respondents worked, for instance in hospitals as trainee health professionals, in hospices or rehabilitation centres, with children or disabled persons and providing domiciliary social care. This common multi-setting employment pattern illustrates why a ban on staff working in multiple LTCFs was possibly unsustainable and ineffective. It imposed possibly unacceptable employment terms on individuals and may have been ineffective for transmission reduction, given the other cross-setting infection transfer potential in the real-world working practices of this staff group. It is worth noting that all of these other settings are also experiencing concurrent significant workforce shortages²¹; a sustained ban on multi-setting care-related work would need to be planned carefully and supported financially to be practical. It would also be undesirable to disrupt potential for earning and skills development of trainee health professionals. We note that we do not have information about any direct transmission between LTCFs or from individual staff into LTCFs, or that any of these reported multi-setting working practices led to new COVID introduction into specific LTCFs.

Fake answers (“Bots”) plagued our second- and third-wave surveys. Bot problems could be reduced with invitation-only surveys, but this was not viable in our research; no suitable contact information database was available. Removing an incentive might not eliminate the Bot risk since many of the Bot entries did not leave contact details for the prize draw; we speculate that many Bot entries are

training and exploration runs. We recommend that other public online survey writers make open-ended text answers compulsory to answer, because open-text answers especially revealed Bots. Including multiple quality-control check questions also uncovers Bots, especially if the questions involve cognitive skills or knowledge of popular culture or current affairs.

Limitations

Respondents outside southern and eastern England were poorly represented. Managers/senior care workers (who also overwhelmingly provide at least some personal care while managing other staff and making operational decisions) were over-represented compared to junior care workers who do not have any management responsibility. It is estimated that there are nearly 17,000 LTCFs in the UK employing over 600,000 staff³⁷; it seems highly likely our survey advertising did not reach most LTCF staff but we do not have information to discern if any particular kind of LTCF was under-represented. Response count to Wave 3 was low which increases the likelihood that the answers were not representative. It is plausible that respondent numbers declined over time due to “research fatigue”, as key workers became weary of being asked about their situation during the UK COVID epidemic³⁸. With regard to providing personal care in other paid or voluntary settings, ability to work in multiple LTCFs was restricted during the survey periods and it seems likely that the prevalence of such cross-setting work reported here is lower than past or future prevalence (in non-pandemic conditions). We did not ask about testing habits or challenges. Concurrently during all survey waves, LTCF staff had to test frequently for SARS-CoV-2, with expected self-isolation to follow positive results. This testing regime may have imposed its own psychological, financial and/or mental health burdens.

Conclusions

Morale, attitudes towards working environment and perception about colleague collaboration were generally positive among most LTCF staff respondents at three different points in the middle-late Covid epidemic period in Britain, including when mortality risk was very high. ICP training and preparedness from first survey response date (November 2020) was perceived as adequate for staff to feel confident in their daily duties. Staff generally felt more positive than negative feelings at work. The working environment was still acknowledged to be challenging. Masks were the single form of PPE item most consistently used; eye protection the least used. Mask-wearing was linked to poorer communication and resident discomfort as well as mild negative health impacts on many staff, such as dehydration and adverse skin reactions. Hand sanitiser was also cited as causing skin irritation.

References

1. Kaeuffer C, Le Hyaric C, Fabacher T, Mootien J, Dervieux B, Ruch Y, et al. Clinical characteristics and risk factors associated with severe COVID-19: prospective analysis of 1,045 hospitalised cases in North-Eastern France, March 2020. *Eurosurveillance*. 2020;25:2000895.
2. Parohan M, Yaghoubi S, Seraji A, Javanbakht MH, Sarraf P, Djalali M. Risk factors for mortality in patients with Coronavirus disease 2019 (COVID-19) infection: a systematic review and meta-analysis of observational studies. *The Aging Male*. 2020;23:1416-24.
3. Methodist Homes. *Facts & Stats*. 2022.
4. Burki T. England and Wales see 20 000 excess deaths in care homes. *The Lancet*. 2020;395.
5. McMichael TM, Clark S, Pogosjans S, Kay M, Lewis J, Baer A, et al. COVID-19 in a long-term care facility—King County, Washington, February 27–March 9, 2020. *Morbidity and Mortality Weekly Report*. 2020;69.
6. Rajan S, Comas-Herrera A, Mckee M. Did the UK government really throw a protective ring around care homes in the COVID-19 pandemic? *Journal of Long-Term Care*. 2020;2020:185-95.
7. McKee M. No minister, a “protective ring” was not thrown around care homes. *British Medical Journal* 2022;377.
8. Daly M. COVID-19 and care homes in England: What happened and why? *Social Policy & Administration*. 2020;54:985-98.
9. International A. As if expendable: The UK government’s failure to protect older people in care homes during the Covid-19 pandemic. *Amnesty International London*; 2020. p. 52.
10. Langins M, Curry N, Lorenz-Dant K, Comas-Herrera A, Rajan S, Organization WH. The COVID-19 pandemic and long-term care: What can we learn from the first wave about how to protect care homes? *Eurohealth*. 2020;26:77-82.
11. Towers A-M, Killelt A, Handley M, Almack K, Backhouse T, Bunn D, et al. Producing ‘Top Tips’ for care home staff during the COVID-19 pandemic in England: rapid reviews inform evidence-based practice but reveal major gaps. *Journal of Long-Term Care*. 2020.
12. Marshall F, Gordon A, Gladman JR, Bishop S. Care homes, their communities, and resilience in the face of the COVID-19 pandemic: interim findings from a qualitative study. *BMC Geriatrics*. 2021;21:1-10.
13. Nyashanu M, Pfende F, Ekpenyong MS. Triggers of mental health problems among frontline healthcare workers during the COVID-19 pandemic in private care homes and domiciliary care agencies: Lived experiences of care workers in the Midlands region, UK. *Health & Social Care in the Community*. 2022;30:e370-e6.
14. Skills for Care. *Workforce Intelligence*. Skills for Care; 2021.
15. Hussein S. The English social care workforce: the vexed question of low wages and stress. In: Christensen K, Pilling D, editors. *The Routledge Handbook of Social Care Work Around the World*: Taylor & Francis; 2017. p. 74-87.
16. Moriarty J, Manthorpe J, Harris J. *Recruitment and retention in adult social care services*. Kings College London; 2018.
17. Greenberg N. Mental health of health-care workers in the COVID-19 era. *Nature Reviews Nephrology*. 2020;16:425-6.
18. Smith LE, Serfioti D, Weston D, Greenberg N, Rubin GJ. Adherence to protective measures among healthcare workers in the UK: a cross-sectional study. *Emergency Medicine Journal*. 2022;39:100-5.
19. Griffin M, Martino RJ, LoSchiavo C, Comer-Carruthers C, Krause KD, Stults CB, et al. Ensuring survey research data integrity in the era of internet bots. *Quality & Quantity*. 2021:1-12.

20. Simone M. How to Battle the Bots Wrecking Your Online Study. *Behavioural Scientist: Behavioural Scientist*; 2019.
21. O'Connor S. UK plan shows how not to deal with labour shortages. *The Financial Times* 2022.
22. Hussein S. "We don't do it for the money" ... The scale and reasons of poverty-pay among frontline long-term care workers in England. *Health & Social Care in the Community*. 2017;25:1817-26.
23. Brady C, Fenton C, Loughran O, Hayes B, Hennessy M, Higgins A, et al. Nursing home staff mental health during the Covid-19 pandemic in the Republic of Ireland. *International Journal of Geriatric Psychiatry*. 2022;37.
24. Riello M, Purgato M, Bove C, MacTaggart D, Rusconi E. Prevalence of post-traumatic symptomatology and anxiety among residential nursing and care home workers following the first COVID-19 outbreak in Northern Italy. *Royal Society Open Science*. 2020;7:200880.
25. Senczyszyn A, Lion KM, Szcześniak D, Trypka E, Mazurek J, Ciulkowicz M, et al. Mental health impact of SARS-COV-2 pandemic on long-term care facility personnel in Poland. *Journal of the American Medical Directors Association*. 2020;21:1576.
26. Greene T, Harju-Seppänen J, Adeniji M, Steel C, Grey N, Brewin CR, et al. Predictors and rates of PTSD, depression and anxiety in UK frontline health and social care workers during COVID-19. *European Journal of Psychotraumatology*. 2021;12:1882781.
27. Okechukwu CA, El Ayadi AM, Tamers SL, Sabbath EL, Berkman L. Household food insufficiency, financial strain, work–family spillover, and depressive symptoms in the working class: The work, family, and health network study. *American Journal of Public Health*. 2012;102:126-33.
28. Bushe D, Leary A, Punshon G. The experience of care home staff during COVID-19: a survey report by the QNI's International Community Nursing Observatory. 2020. p. 24.
29. Saloniki E-C, Turnpenny A, Collins G, Marchand C, Towers A-M, Hussein S. Abuse and Wellbeing of Long-Term Care Workers in the COVID-19 Era: Evidence from the UK. *Sustainability*. 2022;14:9620.
30. Hussein S, Saloniki E, Turnpenny A, Collins G, Vadean F, Bryson A, et al. COVID-19 and the Wellbeing of the Adult Social Care Workforce: Evidence from the UK. The Personal Social Services Research Unit, University of Kent: Canterbury, UK. 2020.
31. Malmgren Fänge A, Christensen J, Backhouse T, Kenkmann A, Killett A, Fisher O, et al. Care home and home care staff's learning during the COVID-19 pandemic and beliefs about subsequent changes in the future: A survey study in Sweden, Italy, Germany and the United Kingdom. *Healthcare*. 2022;10:306.
32. Wild DJ, Szczepura A. Reimagining care homes: can the COVID-19 pandemic act as a catalyst for enhancing staff status and education? *Nursing Older People*. 2021;33.
33. Brainard J, Rushton S, Winters T, Hunter PR. Introduction to and spread of COVID-19-like illness in care homes in Norfolk, UK. *Journal of Public Health*. 2021;43:228-35.
34. Shallcross L, Burke D, Abbott O, Donaldson A, Hallatt G, Hayward A, et al. Factors associated with SARS-CoV-2 infection and outbreaks in long-term care facilities in England: a national cross-sectional survey. *The Lancet Healthy Longevity*. 2021;2:e129-e42.
35. Hamilton WL, Tonkin-Hill G, Smith ER, Aggarwal D, Houldcroft CJ, Warne B, et al. Genomic epidemiology of COVID-19 in care homes in the east of England. *Elife*. 2021;10:e64618.
36. Learner S. Care worker shortages force government to lift Covid ban on staff working in more than one care home. *carehome.co.uk*; 2021.
37. Anonymous. Care home stats: number of settings, population & workforce. 2022.
38. Gnanapragasam SN, Hodson A, Smith LE, Greenberg N, Rubin GJ, Wessely S. COVID-19 survey burden for healthcare workers: Literature review and audit. *Public Health*. 2021:94-101.

List of Supplemental files

Supplemental file 1. Survey instrument, Wave 3

Supplemental file 2. Weekly count of Wave responses, with English COVID-19 mortality and variants of concern emergence

Supplemental file 3. Counts of respondents who worked in other settings potentially providing personal care to people

Supplemental file 4. Respondent locations

Supplemental file 5. Frequency of using specific forms of PPE recently at work : n, %

Supplemental file 6. Open text comments from respondents

Journal Pre-proof