Adherence to physical distancing guidance in Ireland: a nationally representative analysis from the International COVID-19 Awareness and Responses Evaluation (iCARE) study

Hannah Durand, Simon L. Bacon, Molly Byrne, Karen Farrell, Eanna Kenny, Kim L. Lavoie, Brian E. McGuire, Jenny McSharry, Oonagh Meade, Robert Mooney, Chris Noone, Laura L. O'Connor, Kate O'Flaherty, Gerard J. Molloy, The iCARE Study Team

1 School of Psychology, National University of Ireland, Galway, Galway, H91 EV56, Ireland
2 Montreal Behavioural Medicine Centre, Hôpital Sacré-Cœur de Montréal, Montreal, Quebec, QC H4J 1C5, Canada
3 Department of Health, Kinesiology & Applied Physiology, Concordia University, Montreal, Quebec, QC H4B 2A7, Canada
4 Department of Psychology, University of Quebec at Montreal, Montreal, Quebec, QC H2L 2C4, Canada
5 Communications, Department of Health, Government of Ireland, Dublin, D02 XW14, Ireland
6 Health and Wellbeing, Department of Health, Government of Ireland, Dublin, D02 XW14, Ireland

First published: 19 Apr 2021, 4:36
Latest published: 19 Apr 2021, 4:36

Abstract

**Background:** Physical distancing measures (i.e., limiting physical contact with people outside of one's household, maintaining a 2-metre distance between oneself and others, avoiding non-essential travel, etc.) are among the primary strategies used to prevent transmission of SARS-CoV-2, the virus that causes coronavirus disease 2019 (COVID-19). These measures will remain crucial during the rollout of newly developed vaccines to limit community-based spread of COVID-19 and prevent healthcare systems from becoming overburdened. Therefore, it is essential to understand the determinants of public adherence to physical distancing measures to inform current and future public health communications.

**Methods:** As part of the International COVID-19 Awareness and Responses Evaluation (iCARE) study, a cross-sectional survey was conducted to evaluate behavioural responses to physical distancing measures in Ireland. A nationally representative sample of 1000 adults completed the survey over one week in June 2020 during Phase 2 restrictions. Participants completed measures assessing socio-demographic characteristics, theory-based psychological predictors, and physical distancing behaviours.

**Results:** Awareness of restrictions in place at the time of data
collection was high overall, as was adherence to most physical distancing measures. Participants aged 25–34 years reported the poorest adherence to maintaining a 2-metre distance from others (71.2%, versus 79–90% for all other age groups), avoiding social gatherings (42.4%, versus 52–62%) and avoiding non-essential travel (63.9%, versus 69–79%). Females were slightly more adherent than were males to most measures. Adherence also varied according to participant beliefs and COVID-19 risk category.

Conclusions: These results indicate that adherence to physical distancing guidelines varies depending on the behaviour in question as well as socio-demographic and psychological factors. Although some non-adherence was evident for all physical distancing behaviours, adherence was generally high. Future interventions to improve adherence to physical distancing measures should target individual-level determinants of adherence in tandem with effective public health interventions.

Keywords
COVID-19, SARS-CoV-2, social distancing, physical distancing, behaviour change, iCARE

This article is included in the Coronavirus (COVID-19) collection.
Introduction

The rapid spread of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and the resultant ongoing global coronavirus disease 2019 (COVID-19) pandemic has necessitated the implementation of several behaviour-based disease prevention measures. Public adherence to these measures has proved vital to slow the spread of COVID-19 infection in the community. One of the most powerful measures at our disposal to slow the spread of COVID-19 is physical distancing (Anderson et al., 2020; Islam et al., 2020). Physical distancing (previously described as social distancing; Harris et al., 2020; Kumar, 2020) is a set of non-pharmaceutical public health interventions designed to prevent the spread of a contagious disease by maintaining a physical distance between people and reducing the number of times people come into close physical contact with others, for example by reducing social gatherings and non-essential travel outside the home (Harris et al., 2020). The basic goal of distancing measures is to decrease the average number of people an infected person will infect in turn (i.e., the effective reproduction number, \( R \)) to below 1. Once \( R \) is reduced to well below 1, more stringent and costly physical distancing restrictions such as school and workplace closures may be lifted while keeping the number of new cases of the disease stable.

Even with recently developed vaccines offering protection against COVID-19 coming to market and being rolled out internationally (Polack et al., 2020; Voysey et al., 2021), physical distancing is likely to form part of the public’s everyday life for the foreseeable future. Until a sufficiently large proportion of the population is immunised from COVID-19, physical distancing will be required to slow community transmission, limit opportunities for virus mutation, and prevent overburdening of the healthcare system. Therefore, understanding the determinants of public adherence to physical distancing measures is of vital importance to support effective public health interventions and communications to promote these behaviours.

Several factors are likely to determine why people do or do not adhere to various public health measures. Of the many behaviour change models outlined in the literature, these two complementary theoretical approaches may be applied to usefully summarise these factors: (1) the COM-B (Capability, Opportunity, Motivation-Behaviour) model, which posits that capability, opportunity, and motivation factors must be present in order for any given behaviour to occur (Michie et al., 2011); and (2) the Health Belief Model, which posits that health behaviours are predicted by the individual’s perceived benefits, perceived barriers, perceived susceptibility, perceived severity, self-efficacy, and cues to action (Rosenstock et al., 1988). Together these models provide a comprehensive framework for understanding the psychological, behavioural, social, and environmental factors that predict human behaviour change and adaptation. Many of these factors, particularly motivations, beliefs, and concerns about COVID-19 are likely to vary according to demographic variables, such as socioeconomic and employment status, developmental stage, and membership of groups at higher risk of COVID-19-related complications, for example, older age groups (Atchison et al., 2020), those with pre-existing chronic conditions, and those who are immunocompromised.

The current study forms part of the International COVID-19 Awareness and Responses Evaluation (iCARE) survey (Bacon et al., 2021). iCARE was established to assess public awareness, attitudes, concerns, and behavioural responses to COVID-19 public health policies, and their impacts, on people around the world, and to link behavioural survey data with policy, mobility, and case data to provide behavioural science, data-driven recommendations to governments on how to optimise current policy strategies to reduce the impact of the COVID-19 pandemic. Therefore, the current study aimed to evaluate rates of adherence to a suite of physical distancing behaviours and to identify potential determinants of adherence behaviour in the context of the ongoing COVID-19 pandemic in the Republic of Ireland using a nationally representative sampling strategy.

Method

The current study is reported in line with the STrengthening the Reporting of OBservational studies in Epidemiology (STROBE) statement (von Elm et al., 2008). A protocol for the current study has been published (Durand et al., 2020). The current study forms part of a broader project focused on physical distancing in Ireland, which is registered with the Open Science Framework (Durand et al., 2020).

Ethical approval

Ethical approval for the current study was sought and obtained from the Research Ethics Committee at NUI Galway (Ref no.: HRB20-Apr-18). The iCARE study received ethical approval from the Human Research Ethics Committee of the CIUSSS-NIM (Ref no.: #2020-2099 / 03-25-2020).

Study design

The iCARE study is an international, multi-wave, cross-sectional, observational cohort study, the aim of which is to assess public awareness, attitudes, concerns, and behavioural responses to COVID-19 public health policies, and their impacts, in order to provide behavioural science, data-driven recommendations to governments on how to optimise policy strategies to reduce the impact of the COVID-19 pandemic worldwide. Survey data is collected in monthly waves using convenience snowball sampling (globally) and parallel representative sampling in targeted countries. The core elements of the survey assess awareness, attitudes, and beliefs regarding local COVID-19 public health policies; behavioural responses (i.e., adherence) to local COVID-19 public health policies; concerns about COVID-19; impacts of COVID-19 and its policies (social, occupational, economic, physical and mental health); COVID-19 information sources; COVID-19 testing and infection status; physical and mental health status; general health behaviours; socio-demographics; socio-economic barriers and facilitators of adherence. Questions assessing awareness, attitudes, concerns, behavioural responses, and barriers and facilitators to adherence are aligned with the constructs in both the COM-B (Michie et al., 2011) and Health Belief Model.
(Rosenstock et al., 1988; see Measures, below). Questions assessing impacts of COVID-19 were also chosen to facilitate comparison with international COVID-19 studies involving the National Institutes of Health (NIH Office of Behavioral and Social Sciences Research, 2020) and World Health Organization (WHO, 2020). A complete report of the iCARE study method is published (Bacon et al., 2021).

The current analyses were carried out on data collected from a nationally representative sample of adult participants residing in the Republic of Ireland (described below) collected during Survey 3 of iCARE, between 24th – 30th June 2020 inclusive. At that time, Ireland was in Phase 2 of the government’s short-term emergency response approach, described in the Government of Ireland Roadmap for Reopening Business and Society. In brief, residents in Ireland could travel within their own county or up to 20 kilometres from their home if crossing county boundaries; meet up to 6 people from outside their household either indoors or outdoors for social gatherings; and take part in organised outdoor exercise, sporting, cultural, or social activities with up to 15 people. All retail shops were permitted to open, including non-essential retail. Bars and restaurants were open for dine-in and take-away service. Working from home was encouraged where possible. Avoiding public transport was also advised, and capacities on public transport were reduced. Maintaining physical distance of 2 metres between individuals from different households in work, social, and retail settings was advised. This was supported through the use of government signage in public spaces and guidance for retailers. Public health guidelines were enforced by the Irish police force, An Garda Síochána, using a graduated policing response (i.e., engage, educate, encourage, and, as a last resort, enforce) based on its tradition of policing by consent (An Garda Síochána, 2020).

Participants
People aged 18 years and over and living in the Republic of Ireland were eligible to participate. Participants were recruited using panel provision services of Amárach Research, a market research agency based in Ireland. The average cooperation rate (i.e., the extent to which contacted individuals cooperate with a request to participate in a survey) for surveys of similar length utilising these services is 20%. A total of 1424 participants provided complete responses to the survey. A sub-sample of 424 participants was removed randomly from over-represented sociodemographic categories to bring the final sample as close as possible to nationally representative. A weighting variable was subsequently applied to the dataset to ensure the analyses were reflective of the entire population. This approach was taken to ensure the sample was nationally representative of the population of the Republic of Ireland in terms of key demographic and socioeconomic factors (i.e., age, gender, and socioeconomic status), and to strengthen our ability to make general inferences from the data.

Measures
A questionnaire tool was designed specifically for the iCARE study. Due to the unavailability of validated scales, questionnaire items were determined in line with current global COVID-19 prevention policies and health psychology theory, specifically the COM-B model (Michie et al., 2011), a framework for understanding behaviour as an interaction between capability, opportunity, and motivation factors, and the Health Belief Model (Rosenstock et al., 1988), a social cognitive health behaviour change model developed to explain and predict health-related behaviours, comprising perceived benefits, perceived barriers, perceived susceptibility, perceived severity, self-efficacy, and cues to action constructs as predictors of health behaviour. The survey consisted of 50 questions (92 items). The core elements of the survey assessed the following domains: awareness of local COVID-19 public health policies; attitudes/beliefs about local COVID-19 public health policies; behavioural responses (adherence) to local COVID-19 public health policies; perceived concerns about COVID-19; the impacts of COVID-19 and its policies (social, occupational, economic, physical and mental health); COVID-19 information sources; COVID-19 testing and infection status; physical and mental health status; general health behaviours; socio-demographics; and socio-economic barriers and facilitators of adherence. The questionnaire tool is publicly available via the Open Science Framework (Lavoie & Bacon, 2020).

Procedure
Members of an Amárach research panel were invited to participate in the iCARE survey via email invitation. Given that the iCARE study was already underway, with data collection for Surveys 1 and 2 already completed, by the time the current project (Durand et al., 2020b) began, targeted recruitment efforts focused on Survey 3. Participants provided informed consent for study participation and completed the iCARE survey distributed using the LimeSurvey® open-source tool via smartphone, laptop, or personal computer. The survey took approximately 15–20 minutes to complete and all responses were anonymous. Participants were then directed to provide their contact information on a separate form in order to be entered into a prize draw for one of six multi-store gift vouchers to the value of €25.

Statistical analyses
Data were analysed descriptively using SPSS v.25.0 (IBM Corp, 2017). Missing data was handled using a listwise deletion approach due to the small and random nature of the missing data and the large sample size.

Results
Sample characteristics
Participant sociodemographic characteristics are provided in Table 1 (Durand et al., 2020a). Participants ranged in age from 18 to 89 years (M = 45.32; SD = 15.67). Of the total sample, 222 (22.2%) were over the age of 60 and therefore considered to be at high risk from COVID-19 (i.e., more likely to become seriously ill if they contract COVID-19; Health Service Executive, 2020).

Of the total sample, 37.2% had at least one pre-existing health condition that meant they were at high or very high risk
Overall, participants had good awareness of the physical distancing measures in place in Ireland at the time of participation. Specifically: 98.5% were aware of the recommendation to maintain two metres distance from others outside of your household; 83.5% were aware of the recommendation to work from home if possible; 91% were aware of advice to avoid non-essential travel; 91% were aware of the requirement to self-isolate on return from travel; 95.2% were aware of the requirement to self-isolate/restrict movements if you have symptoms; 73% were aware of advice to avoid going to bars and restaurants. The policies for which there were the lowest levels of awareness were avoiding social gatherings (50.4%) and avoiding playdates with children from other households (51.7%).

### Attitudes towards government measures

The majority of participants (87.0%) felt that measures taken by the government to slow the spread of COVID-19 were very important. Less than 1% (0.6%) of respondents felt that the measures were not important at all. Most (80.3%) felt that the measures were ‘about right’ in terms of stringency. Only 7.0% felt that the measures were too strict, while 11.8% felt the measures were too lenient. With regard to government motivations (i.e., protecting public health versus protecting the economy), 48.9% felt the government’s actions were generally motivated by protecting public health. A further 39.7% believed the government’s actions were generally motivated by protecting public health and secondarily motivated by protecting the economy. In contrast, 6.7% of respondents believed the government’s actions were generally motivated by protecting the economy and secondarily by protecting public health. Only 2.8% felt the government’s primary motivation was protecting the economy.

### Adherence to physical distancing measures

Overall adherence to physical distancing measures was high, with the majority of participants reporting that they adhered to public health measures ‘most of the time.’ Specifically: 83.7% reported they maintained two metres distance from others outside of their household; 55.9% reported avoiding social gatherings; 71.6% reported avoiding non-essential travel; 58% reported avoiding public transport unless essential; 55.5% reported working from home; 69.2% reported avoiding bars and restaurants. The policies for which there were the lowest levels of awareness were avoiding social gatherings (50.4%) and avoiding playdates with children from other households (51.7%).

### Potential determinants of adherence to physical distancing measures

Theoretical determinants of adherence to physical distancing measures are discussed as per COM-B under Capability, Opportunity, and Motivation headings in line with the proposed conceptual model outlined by Bacon and Lavoie for the iCARE study (2021).

### Demographics

#### Age

Participants aged between 25 and 34 years were the least adherent to several physical distancing measures: maintaining two metres distance from others (71.2%, versus 79–90% for all other age groups); avoiding social gatherings (42.4%, versus 52–62%); avoiding non-essential travel

### Awareness of government measures

Given the relative leniency of restrictions in place at the time of data collection, a distinction must be drawn between mandated and voluntary preventive behaviours when interpreting the following awareness and adherence data. In particular, though government advice was to limit social contacts, social gatherings of six persons or fewer were permitted under Phase 2 restrictions. Bars and restaurants were also permitted to open to the public provided physical distancing was facilitated and increased hygiene precautions were implemented. This is therefore likely to have affected responses to the iCARE survey, and the following results should be interpreted with this in mind.

#### Table 1. Sociodemographic profile of the sample.

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>511</td>
<td>51.1</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18 – 24</td>
<td>110</td>
<td>11.0</td>
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<tr>
<td>25 – 34</td>
<td>185</td>
<td>18.5</td>
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<tr>
<td>35 – 44</td>
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<td>20.9</td>
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<tr>
<td>45 – 54</td>
<td>175</td>
<td>17.5</td>
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<tr>
<td>55+</td>
<td>321</td>
<td>32.1</td>
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<tr>
<td>Region</td>
<td></td>
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<tr>
<td>Dublin</td>
<td>292</td>
<td>29.2</td>
</tr>
<tr>
<td>Leinster (excluding Dublin)</td>
<td>261</td>
<td>26.1</td>
</tr>
<tr>
<td>Munster</td>
<td>270</td>
<td>27.0</td>
</tr>
<tr>
<td>Connacht or Ulster</td>
<td>177</td>
<td>17.7</td>
</tr>
<tr>
<td>Social class (NRS social grade)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ABC1/F50+ (higher SES)</td>
<td>483</td>
<td>48.3</td>
</tr>
<tr>
<td>C2DE/F50- (lower SES)</td>
<td>517</td>
<td>51.7</td>
</tr>
</tbody>
</table>

Note: NRS social grade = National Readership Survey system of demographic classification; SES = socioeconomic status
Participants aged between 18 and 24 were most adherent to self-isolation measures: 55.4% reported self-isolating after return from travel, versus approximately 35% for all other age groups; 57.2% reported self-isolating if suspected or confirmed to have COVID-19, versus 43–48% for all other age groups. There were no other notable differences in adherence based on age.

**Sex.** Females were marginally more adherent to physical distancing measures than were males. Slightly more females (75.6%) than males (67.6%) reported avoiding non-essential travel. Slightly more females (58.6%) than males (47.3%) reported working from home. Consequently, more females (62.2%) than males (53.7%) reported avoiding public transport. Slightly more females (71.4%) than males (67%) reported avoiding bars and restaurants. There was no difference between males and females in frequency of maintaining two metre distance from others, avoiding social gatherings, or self-isolating when required.

**Capability**

**Risk category.** Participants with a chronic physical health condition that placed them in the high- or very high-risk category reported avoiding social gatherings (60.6% versus 52.9%), avoiding non-essential travel (74.8% versus 69.6%), and avoiding bars and restaurants (73.6% versus 66.4%) slightly more frequently than those in lower risk categories.

**Mental health and quality of life.** There was no notable difference in frequency of adherence to any physical distancing measure between participants with a depressive disorder (e.g., major depression) and those without, or between participants with an anxiety disorder (e.g., generalised anxiety disorder, panic disorder) and those without. Participants who reported that their quality of life had become much worse as a result of the pandemic reported slightly poorer adherence to all physical distancing measures than those whose quality of life had remained the same or changed for the better (mean difference = 8.3%).

**Motivation**

**Perception of COVID-19 policies.** Unsurprisingly, those who considered the government measures put in place to slow the spread of COVID-19 to be very important reported the highest levels of adherence to almost all measures (Figure 2). Those who found the measures to be too strict reported the lowest adherence across most physical distancing behaviours (Figure 3).
Figure 2. Perceived importance of government measures and adherence to physical distancing.

Figure 3. Perceived stringency of government measures and adherence to physical distancing.
COVID-19 beliefs and concerns. Participants who believed they were doing much more than others to prevent COVID-19 transmission reported adhering to all measures most frequently; interestingly, those who believed they were doing much less than most to mitigate the spread of COVID-19 were no less adherent to several physical distancing measures than those who believed they were doing more than most (Figure 4). Higher levels of concerns overall (i.e., concerns about one’s own health and the health of others; concerns about personal financial impact and the economy) were associated with higher rates of reported adherence to prevention measures.

Government policies to promote adherence. Participants reported that information about how their actions are helping to slow the spread of COVID-19 in the community and to save lives was most likely to persuade them to adhere to physical distancing measures. Information about how COVID-19 is spread, COVID-19-related complications and risk of death, and limited healthcare resources were also rated as highly motivating. Information about international infection and death rates, impact of our actions on the economy, and threats of fines, arrest and quarantine were rated as least persuasive (Figure 5).

Opportunity

Socioeconomic status. There were some marginal differences in adherence between high and low socioeconomic status groups. Participants from the higher socioeconomic group (53.6%) reported avoiding social gatherings slightly less frequently than those from the lower socioeconomic group (58.1%). Participants from the higher socioeconomic group (73.5%) reported avoiding non-essential travel more frequently than those from the lower socioeconomic group (69.9%). Participants from the higher group were more frequently able to work from home (63.7% versus 47.7%) and, consequently, avoided public transport more frequently (60.8% versus 55.3%). There were no other notable differences in adherence between the two groups. Adherence data across SES groups is depicted in Figure 6.

Personal experience of COVID-19. Participants who had been or suspected they had been infected with coronavirus did not report adhering to physical distancing measures more frequently than those who had not. Participants who knew someone personally who had or had likely been infected with coronavirus were no more adherent to any physical distancing measure than those who did not. Participants who knew someone personally who had or were suspected to have died from COVID-19 were also no more adherent than those who did not.

Discussion

The current findings provide important information regarding potential predictors of adherence to physical distancing.
behaviour. It is important to note that some of these measures and behaviours are under the individual’s control to a greater extent than others. In particular, it is not possible to do certain kinds of work from home, and, in some cases, employers have not allowed it. This may explain differences in adherence observed between higher and lower SES groups in this sample, given unequal access to remote work across income levels, industries, and socioeconomic groups (Crowley et al., 2020). Encouragingly, adherence to measures that are most under individual control (e.g., maintaining 2-metre distance between individuals) was highest overall. The poorest adherence was observed for avoiding social gatherings. There are several potential explanations for this. First, the survey did not differentiate between small and large social gatherings. Small social gatherings were permitted under the restrictions in place at the time of data collection, so it cannot be assumed that those who reported not adhering to this measure at least some of the time were in violation of restrictions or not taking precautions to meet others safely. There may also be a developmental component. Young people aged between 25–34 reported avoiding social gatherings less frequently than other age groups. This may reflect a developmental need among this group to seek out connection with others (Qualter et al., 2015). Furthermore, due to unaffordable housing costs, young adults may be more likely to live alone, in shared rented accommodation with strangers, or with their parents (OECD, 2020), and so may be more likely to seek out social connection with friends and peers to avoid feelings of isolation. It is important that government policies take into account the ways an increasing number of young people are living to ensure

Figure 5. Extent to which various approaches motivate individuals to adhere to measures.
that they are not disproportionately disadvantaged by public health interventions.

The current findings also suggest that women are marginally more adherent to physical distancing measures than are men. This is consistent with international research (Clark et al., 2020). There are several explanations for gender differences in adherence in the context of COVID-19. Women may be more likely to seek out and engage with health information (Ek, 2015), and therefore may have greater knowledge regarding restrictions in place at any given time (Note: though there were no gender differences in awareness of government policies, the current analyses could not elucidate respondents’ understanding of what each measure entailed, e.g., what exactly is meant by ‘self-isolating’ and when it should be done. Qualitative research may be required to evaluate public comprehension of what each mitigation measure entails. Additionally, tolerance for risk and risk-taking propensity are generally lower among women than men (Harris & Jenkins, 2006). Further, females in the current sample were marginally more concerned about health-related effects of COVID-19 and the pandemic than were males, which may have motivated better adherence. Future public health efforts may benefit from incorporating more nuanced guidelines to support safe social engagement with appropriate physical distancing behaviours. Specifically targeting men and younger individuals may be appropriate.

Participants rated measures to promote adherence that were framed positively as being more likely to motivate them to adhere to physical distancing measures. Specifically, providing information on how their actions were helping to slow the spread of infection and save lives were rated as being most likely to promote adherence. Punitive measures such as threats of fines, arrest or quarantine, as well as information that participants may have considered to be less relevant to the Irish context (i.e., information about infection and death rates in other countries) were rated as least likely to promote adherence. Relatedly, participants reported being very concerned about the risk of loved ones and members of the community becoming infected with COVID-19, more so than they were concerned about becoming infected themselves. Future communications strategies that promote pro-social attitudes may be more effective than punitive measure or fear appeals in ensuring adherence to physical distancing measures going forward (Heffner et al., 2021; Jordan et al., 2020; Pfattheicher et al., 2020).

Figure 6. Frequency of adherence to physical distancing measures between higher and lower SES groups.
The current findings must be considered in light of certain limitations. First, although the nationally representative sampling strategy used in this study is an important strength, we did not have sufficient resources to repeat this sampling strategy across additional waves of the iCARE study. Convenience sampling strategies utilised to recruit participants living in Ireland to other waves of the iCARE study yielded much lower rates of recruitment, and so weighting could not be reliably applied. Therefore, it was not possible to assess changes in behaviour over the course of the pandemic. Relatedly, government measures and public health advice were rapidly changing at the time of data collection, and have continued to do so, which may limit the usefulness of some of these analyses. That said, these data provide an important snapshot of the public’s response to an unprecedented public health emergency that can inform future research and public health applications. Future research using a longitudinal design and path analyses may overcome some of these limitations. Second, using the iCARE international survey as opposed to creating our own survey locally did not allow for deviations from the international study protocol in response to the specific trajectory of the pandemic in Ireland. However, this approach serves to reduce participant burden in a busy research space, to minimise research waste (Glaziov et al., 2020), and allow us to contextualise Irish responses within the broader international iCARE sample in future analyses. Third, the survey was created specifically for the iCARE study and therefore its psychometric properties are not well established. That said, principal component analysis of the global dataset yielded 3 to 4 components with very high internal consistency, which supports the reliability of the survey tool. Relatedly, it is not clear whether respondents described certain physical distancing behaviours as being not applicable due to their own personal circumstances or a lack of awareness or understanding of the specific restrictions in place in Ireland at the time. Finally, items relating to travel did not distinguish between international and national travel, which may have impacted estimates of adherence to self-isolation measures.

Limitations notwithstanding, the current study makes an important contribution to the literature on adherence to physical distancing guidance in response to the ongoing COVID-19 pandemic. In particular, the nationally representative sampling strategy ensures strong external validity of the current analyses. As such, these findings can be generalised with some confidence to the population of Ireland. This also allowed for comparisons of key sociodemographic groups to be made. Furthermore, utilising data from the iCARE study, which leverages the expertise and resources of 150 expert collaborators in 40 countries, will facilitate future comparison with international datasets to contribute important evidence to support the development and implementation of COVID-19 policy strategies worldwide.

Conclusion

This cross-sectional study collected data on adherence to physical distancing behaviour from a nationally representative sample of 1000 participants in the Republic of Ireland. Overall adherence rates were high, with some variation between sociodemographic groups. Future interventions to improve adherence to physical distancing measures may benefit from tailoring to specific sociodemographic groups, for example men, younger people, and those who cannot work from home. Public health campaigns should continue to use positively framed messages to promote adherence to physical distancing guidance over more aversive or punitive measures.

Data availability

Underlying data


This project contains the following underlying data:
- icare_NatRepSample Ireland.sav

Data are available under the terms of the Creative Commons Zero “No rights reserved” data waiver (CC0 1.0 Public domain dedication).

Extended data


This project contains the following extended data:
- icare_methods
- Survey

Data are available under the terms of the Creative Commons Attribution 4.0 International license (CC-BY 4.0).

Acknowledgments

The authors would like to acknowledge the staff and students at the Montreal Behavioural Medicine Centre for their ongoing support in relation to the iCARE study. The complete iCARE Study Team is as follows:

Lead investigators: Kim L. Lavoie, PhD, University of Quebec at Montreal (UQAM) and CIUSSS-NIM, CANADA; Simon L. Bacon, PhD, Concordia University and CIUSSS-NIM, CANADA.

Collaborators (in alphabetical order): ABU DHABI: Zahir Vally, PhD, United Arab Emirates University; ARGENTINA: Analía Verónica Losada, PhD, University of Flores; AUSTRALIA: Jacqueline Boyle, PhD, Monash University; Joanne Enticott, PhD, Monash University; Shajedur Rahman Shaxon, PhD, Centre for Big Data Research in Health, UNSW Medicine; Heleni Teede, MD, Monash University; AUSTRIA: Alexandra Kautzy-Willer, MD, Medizinische Universität Wien; BANGLADESH: Arbinbudu Dash, MS, International University of Business, Agriculture & Technology; BRAZIL: Marília Estevam Cornelio, PhD, University of Campinas; Marlus Karsten, Universidade do Estado
Loughborough University; Emily Petherick, PhD, Loughborough University; Lauren Sherar, PhD, Loughborough University; USA: Robert M. Bilder, PhD, ABPP-CN, University of California, Los Angeles; Matthew Burg, PhD, Yale; Susan Czajkowski, PhD, NIH - National Cancer Institute; Ken Freedland, PhD, Washington University; Sherri Sheinfeld Gorin, PhD, University of Michigan; Alison Holman, PhD, University of California, Irvine; Jiyoung Lee, PhD, University of Alabama; Gilberto Lopez ScD, MA, MPH, Arizona State University and University of Rochester Medical Center; Sylvie Naar, PhD, Florida State University; Michele Okun, PhD, University of Colorado, Colorado Springs; Lynda Powell, PhD, Rush University; Sarah Pressman, PhD, University of California, Irvine; Tracey Revenson, PhD, University of New York City; John Ruiz, PhD, University of Arizona; Sudha Sivaram, PhD, NIH, Center for Global Health; Johannes Thrul, PhD, Johns Hopkins; Claudia Trudel-Fitzgerald, PhD, Harvard T.H. Chan School of Public Health; Abehaw Yohannes, PhD, Azusa Pacific University.

Students (in alphabetical order): AUSTRALIA: Rhea Navani, BSc, Monash University; Kushnan Ranakombu, PhD, Monash University; BRAZIL: Daisuke Hayashi Neto, Unicamp; CANADA: Tair Ben-Porat, PhD, Tel Aviv University; Anda Dragomir, University of Quebec at Montreal (UQAM) and CIUSSS-NIM; Amandine Gagnon-Hebert, BA, UQAM; Claudia Gemme, MSc, UQAM; Vincent Gosselin Boucher, University of Quebec at Montreal (UQAM) and CIUSSS-NIM; Mahrukh Jamil, Concordia University and CIUSSS-NIM; Lisa Maria Käfer, McGill University; Ariany Marques Vieira, MSc, Concordia University; Tasiaf Tasbih, Concordia University and CIUSSS-NIM; Maegan Trottier, University of Lethbridge; Robbie Woods, MSc, Concordia University; Reyhanen Yousefi, Concordia University and CIUSSS-NIM; FRANCE: Tamila Roslyakova, Université de Montpellier; GERMANY: Lilli Priesterroth, Mainz University; ISRAEL: Sharily Edelstein, Hebrew University-Hadassah School of Public Health; Tanya Goldfrad, Hebrew University-Hadassah School of Public Health; Ruth Snir, Hebrew University-Hadassah School of Public Health; Yifat Uri, Hebrew University-Hadassah School of Public Health; NEW ZEALAND: Mohsen Alyami, University of Auckland; NIGERIA: Comfort Suanude; SERBIA: Katarina Vojvodic, University of Belgrade.

Community Participants: CANADA: Olivia Crescenzi; Kyle Warkentin; DENMARK: Katya Grinko; INDIA: Lalita Angne; Jigisha Jain; Nikita Mathur, Syncorp Clinical Research; Anagha Mithe; Sarah Nathan, Community Empowerment Lab.

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Current Peer Review Status: ?

Review Report 03 May 2022

https://doi.org/10.21956/hrbopenres.14399.r31911

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Catherine Darker

Department of Public Health & Primary Care, Trinity College Dublin, Dublin, Ireland

This paper represents an important area of research relating to the attitudes and behaviours of a sample of the general population in Ireland during COVID-19. The area focuses on physical distancing measures as a strategy adopted by the Government to curtail coronavirus transmission. It is a part of an international study.

Strengths include the reporting of methods and results using the STROBE reporting guidelines for transparency, obtaining a nationally representative sample of adults, good sample size obtained.

I am unclear about the following:

- Were the items in the survey piloted?

Potential weaknesses that I would like authors to address:

- As the survey invite was through email and the response method was online - can the authors comment on the potential bias that this introduces in terms of computer literacy, etc.?

- The timing of the survey corresponds with not only a more permissive time period in Ireland in terms of restrictions but also a lower transmission rate in the community in general. What, if any, effect do the authors think that this had on the results?

- Major weakness:
  - The analyses is descriptive only. I think that the sample size should allow for inferential modelling to improve the understanding of covariates, such as SES and psychological constructs in relation to adherence to physical distancing measures.

Is the work clearly and accurately presented and does it cite the current literature?

Yes

Is the study design appropriate and is the work technically sound?
Yes

Are sufficient details of methods and analysis provided to allow replication by others?
Yes

If applicable, is the statistical analysis and its interpretation appropriate?
Partly

Are all the source data underlying the results available to ensure full reproducibility?
Yes

Are the conclusions drawn adequately supported by the results?
Partly

**Competing Interests:** No competing interests were disclosed.

**Reviewer Expertise:** Behavioural change interventions, population health

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however I have significant reservations, as outlined above.

Reviewer Report 21 June 2021

https://doi.org/10.21956/hrbopenres.14399.r29605

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**Mark Tully**
Institute of Mental Health Sciences, School of Health Sciences, Ulster University, Newtownabbey, UK

In this paper, the authors have used data from a nationally representative sample of 1000 Irish residents to evaluate adherence and awareness to COVID-19 public health restrictions.

This is a very well written article and contains very useful information for the public health and behavioural science communities in our ongoing efforts to encourage and support adherence to public health guidance.

There are a couple of minor points that might be useful to clarify in the text:
- In the introduction (page 3, paragraph 2) the authors state "physical distancing is likely to form part of the public's everyday life for the foreseeable future". Whilst I agree with the sentiment, I wonder if the tone might be misleading to some. There is some debate in public health over the behaviours that might be beneficial to seek as a permanent feature
of daily life in dealing with COVID-19 as an endemic. I wonder if the authors would be willing to take the "foreseeable future" phrase out and join up this sentence with the next one "until such a time as...". This would reduce the risk that some may misinterpret the first sentence as a suggestion that the full range of measures may be required semi-permanently.

- In the introduction (page 3, paragraph 3), COM-B is referred to as a theoretical approach. This infers that COM-B is a theory. It is clearly theory-based, drawing on motivation theory, but it is a framework covering a broad range of possible determinants that overlaps with a number of theories. Would the authors consider rephrasing this sentence?

- Finally, in the statistical analysis section, date is reported to be analysed descriptively. I think it would add to this paper if the analysis sought to identify independent predictors of awareness and adherence. This would add to the value of the paper to the public health community as it would help target future interventions. It would help support the assertions around the relationship between two variables. For example, in the results it is stated that "Females were marginally more adherent to physical distancing measures than were males". This leaves a query as to if this is an independent relationship or could be related to a third (measured or unmeasured) confounding variable. Perhaps the authors had a good reason for presenting descriptive analysis only. If so, I suggest they make this clear in the methods section and note it as a limitation in the discussion.

Is the work clearly and accurately presented and does it cite the current literature?
Yes

Is the study design appropriate and is the work technically sound?
Yes

Are sufficient details of methods and analysis provided to allow replication by others?
Yes

If applicable, is the statistical analysis and its interpretation appropriate?
Partly

Are all the source data underlying the results available to ensure full reproducibility?
Yes

Are the conclusions drawn adequately supported by the results?
Yes

**Competing Interests:** No competing interests were disclosed.

**Reviewer Expertise:** Public health science

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however I have significant reservations, as outlined above.