# Worry, behaviour and stigma following UK Government communications during the COVID-19 outbreak: results from three UK surveys

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PLAIN ENGLISH SUMMARY

Background

* This paper used data from the first three waves of the UK Department of Health and Social Care’s weekly COVID-19 survey, collected from 6,024 participants between 28 January and 13 February 2020.
* We examined associations with: being ‘very’ or ‘extremely’ worried about coronavirus; having done any recommended respiratory or hand hygiene behaviour more than usual in the past seven days; reducing the number of people you meet (a behaviour not currently recommended); and agreeing or strongly agreeing that “because of the coronavirus outbreak, it is best to avoid areas of the UK that are heavily populated by Chinese people.”

Worry

* Approximately 20% of participants were worried about coronavirus. This is higher than at the equivalent time point in the H1N! swine flu pandemic in 2009/10 (median over seven surveys: 14%).
* People were substantially more likely to be worried if they were from a Black or minority ethnic group. Younger participants, people with dependent children, those with a chronic illness in the household, people from areas of higher deprivation and NHS workers were also more likely to be worried.

Recommended behaviours

* 40% of respondents had completed one or more recommended respiratory or hand hygiene behaviours in the last seven days.
* Worry was strongly associated with these behaviour changes.
* 54% of participants recalled having seen the “Catch it, Bin it, Kill” campaign.
* Having seen advice on how to protect oneself and exposure to the “Catch it, Kill it, Bin it” campaign were both associated with changing behaviour.
* The perceived effectiveness of each behaviour, and a participant’s belief that they could perform that behaviour if they wanted to (self-efficacy) showed consistent associations with carrying out the behaviours.

Reducing the number of people you meet

* 14% of participants had reduced the number of people they had met in the last seven days.
* People who were worried and who perceived more risk from coronavirus were more likely to try to reduce the number of people they had met.
* Receiving information from official sources and having seen recommendations to “Catch it, Bin it, Kill it” were associated with participants reducing the number of people they had met.

Stigma

* 26% of respondents agreed or strongly agreed that it was best to avoid areas in the UK that were heavily population by Chinese people.
* Worry and perceived risk showed the largest associations with this attitude.
* Having seen or heard information from official sources, satisfaction with the Government’s response and the perceived credibility of the Government were associated with being more likely to endorse this stigmatising attitude.

Recommendations

* Since the current iteration of ‘Catch it, Bin it, Kill it’ is having a positive impact on behaviour but has only been seen by 54% of people, methods for improving its dissemination or impact should be considered.
* Focussing on worry or risk perceptions in communications is not recommended, because this is likely to increase uptake of non-recommended behaviours, as well as recommended behaviours.
* Focussing on efficacy and self-efficacy for specific behaviours may be an effective way of improving uptake. This may be particularly true for behaviours which are not already perceived as highly efficacious.

Abstract

Objectives: To identify the levels of worry, behaviour change and stigmatising attitudes in the UK population in the early stages of the COVID-19 outbreak; to identify whether demographic or attitudinal variables were associated with these outcomes; and to assess the impact of official communications on these outcomes.

Design: Three cross-sectional on-line surveys were conducted using quotas based on age, sex and region.

Setting: Data were collected in three waves; 28 to 30 January (wave 1, n=2016), 3 to 6 February (wave 2, n=2002) and 10 to 13 February 2020 (wave 3, n=2006).

Participants: Participants aged 16 years or over and living in the UK.

Main outcome measures: Being very or extremely worried about coronavirus; having carried out any of eight behaviours recommended by the UK Government “more than usual” in the past seven days; reducing the number of people you meet (a behaviour not currently recommended) more than usual; and agreeing or strongly agreeing that “because of the coronavirus outbreak, it is best to avoid areas of the UK that are heavily populated by Chinese people”. Behaviour and stigma were measured in wave 3 only.

Results: 1,191 people (19.8%) were very or extremely worried about coronavirus. Eight hundred participants (39.9%) had completed one or more Government recommended behaviours more than usual in the last seven days and 274 (13.7%) had reduced the number of people they had met. Five-hundred and twenty-four people (26.1%) agreed that it was best to avoid areas in the UK that were heavily populated by Chinese people. People from Black and minority ethnic groups were particularly likely to feel worried (adjusted odds ratio 2.50, 95% confidence interval (CI) (2.02 to 3.09). Recommended behaviour change was particularly associated with worry (2.88, CI: 2.28 to 3.65), obtaining information about the outbreak from “official sources” (1.79, CI: 1.42 to 2.26) and having seen official information campaigns such as “Catch it, Bin it, Kill it” (1.75, CI: 1.45 to 2.13), and also with the perceived efficacy of individual behaviours and self-efficacy for engaging in them. Reducing the number of people you meet was particularly associated with worry (3.76, CI: 2.79 to 5.07) and inversely associated with having friends who work in the NHS (0.55, CI: 0.34 to 0.89). Attitudes towards avoidance of Chinese people was strongly associated with worry (adjusted odds ratio 3.69, CI: 2.86 to 4.75).

Conclusions: These early data suggest a modest engagement with UK Government advice about respiratory and hand hygiene behaviour. Official campaigns appear to be having some impact, but there is a troubling endorsement of avoidance attitudes regarding Chinese population centres in the UK. Increasing the reach and impact of official advice, and targeting perceived efficacy of individual behaviours and self-efficacy of engaging in them may improve uptake of recommended behaviours without increasing stigma or avoidant behaviour.

Key words: COVID-19; stigma; hygiene; public health; psychology

Introduction

The early stages of the COVID-19 outbreak have witnessed a deluge of information being made available to members of the public via mainstream and social media, dubbed an “infodemic” by the World Health Organization.1 Members of the public have been exposed to complex epidemiological information, disagreements between scientists as to the current status of the outbreak and its likely future path, frequent admissions of uncertainty from trusted sources, and a morass of confusion, speculation and outright conspiracy theory. In the midst of all this, national governments have attempted to prepare their publics for a possible public health crisis and to convey information about behaviours that may help slow the spread of disease.2 Advice for the UK population includes respiratory and hand hygiene behaviours, such as using tissues or covering the mouth when coughing or sneezing, disposing of tissues appropriately, and frequent, thorough hand washing. Within the UK, this has seen the relaunch of a campaign originally developed in the 2009/10 influenza H1N1 pandemic called “Catch it, Bin it, Kill it.” This campaign showed some promising impact on public behaviours during the 2009/10 pandemic.3 That pandemic was largely perceived by the public to involve a mild illness, however, and detailed surveys with the public throughout the period found that population levels of worry were never particularly high.3-5 Whether the public perceive COVID-19 in the same way, and whether the “Catch it, Bin it, Kill it” campaign remains as effective in 2020 as it was in 2010, is unknown. The influence of trust in the source of information in determining the impact of such campaigns should also not be underestimated.4 6 7 Recent political disputes about the UK’s relationship with the European Union has seen trust in Government decline, with politicians recently replacing advertising executives as the least trusted profession in Britain.8

The UK’s situation with the COVID-19 outbreak differs from its experience with 2009/10 pandemic in another respect. The H1N1 pandemic emerged from Mexico and COVID-19 from China. While the UK does not have a large Mexican population, it does have a large Chinese population. In 13 areas of the UK, all of them urban, between 1.5 to 3.4% of the local population are Chinese.9 Outbreaks of infectious diseases that are associated with a particular demographic group can sometimes trigger stigmatisation10 and anecdotal reports suggest that this is now occurring in the UK. This emphasises the challenge of encouraging the public to adopt protective behaviours without inadvertently contributing to stigmatisation of groups or causing the public to adopt other behaviours that have not been recommended.

In this study, we report data from three weekly waves of a national survey commissioned by the English Department of Health and Social Care. We assessed population levels of worry, recommended behaviours, non-recommended behaviours and stigmatising attitudes. We investigated whether these outcomes were associated with: levels of worry about, and perceived risk associated with, COVID-19; knowledge about the outbreak, how much had been heard about it and where information had been received from; self-reported exposure to the “Catch it, Bin it, Kill it” campaign or other official advice on how to protect oneself; and levels of trust in and perceived credibility of the UK Government. For behavioural outcomes, we investigated whether they were associated with perceived efficacy of the behaviour and the participant’s belief that they could do that behaviour if they wanted to (self-efficacy), as predicted by Protection Motivation Theory11.

Method

Design

Weekly online surveys were conducted by BMG research on behalf of the Department of Health and Social Care (wave 1: 28 to 30 January 2020; wave 2: 3 to 6 February 2020; wave 3: 10 to 13 February 2020).

Participants

Participants were recruited from Respondi, a specialist research panel provider (n=50,000) and were eligible for the study if they were aged 16 years or over and lived in the UK. Quotas based on age and gender (combined) and Government Office Region reflected targets based on the Office for National Statistics. For this survey, participants were reimbursed in points (equivalent to approximately 25p) which could be redeemed in cash, gift vouchers or charitable donations.

Study materials

The survey questionnaire for waves 1 and 2 was expanded in wave 3, using items derived from a set of questions developed in 2014 in preparation for a future influenza pandemic.12 These items were refined in 2014 in three rounds of qualitative interviews (n=78) and had their test-retest reliability checked in two telephone surveys (n=621).13 Questionnaire items are available in the supplementary material.

Outcome measures

Worry about coronavirus was measured by a single item asking participants “overall, how worried are you about coronavirus.” Responses were on a five-point scale from “not at all worried” to “extremely worried.” This question was asked in all survey waves.

Recommended behaviour change was measured by eight items in wave 3 asking participants if, in the last seven days, they had completed behaviours “as much as usual,” “more than usual,” or if they had “not done this.” Behaviours were: washing hands thoroughly and regularly; carrying tissues; using tissues when sneezing or coughing; putting these tissues in the bin; limiting the amount you touch your eyes, nose or mouth; cleaning or disinfecting surfaces you might touch; carrying hand sanitising gel; and using hand sanitising gel.

Non-recommended avoidant behaviour was assessed with a single item in wave 3 using the same response format asking if participants had reduced the number of people they had met in the past seven days.

Stigmatising attitude was measured in wave 3 by asking participants to what extent they agreed that “because of the coronavirus outbreak, it is best to avoid areas in the UK that are heavily populated by Chinese people” on a five-point “strongly disagree” to “strongly agree” scale.

Perceived risk of coronavirus

Participants were asked “to what extent [they] thought coronavirus [posed] a risk to” themselves and people in the UK on a five-point scale from “no risk at all” to “major risk.” These questions were asked in all survey waves.

In wave 3, participants were asked to what extent “coronavirus would be a serious illness for me” on a five-point scale (“strongly disagree” to “strongly agree”).

Knowledge about coronavirus

In wave 3, participants were asked to what extent they agreed or disagreed with seven items relating to misinformation that was being spread at the time of data collection (five-point scale: “strongly disagree” to “strongly agree”). These were:

* I could catch coronavirus from animals
* I could catch coronavirus from packages or products ordered from China
* I could catch coronavirus from someone else who has it, even if they do not have any symptoms yet
* It is likely that I have some natural immunity to coronavirus
* There is a vaccine available to protect against coronavirus
* Antibiotics are an effective treatment for coronavirus
* It is currently unsafe to come into contact with someone who has been to Wuhan in China in the past 14 days, regardless of whether they seem ill or well.

Information about coronavirus

Items about information were asked in wave 3. Participants were asked how much they had “seen or heard about coronavirus in the past seven days” with possible responses being “I have not seen or heard anything,” “I have seen or heard a little,” “I have seen or heard a fair amount,” and “I have seen or heard a lot.” Participants were asked if they had seen or heard “advice on how to protect yourself and others from coronavirus” and “recommendations to ‘Catch it, Bin it, Kill it’” in the last seven days. Possible answers were “yes, I have seen or heard this” and “no, I haven’t seen or heard this.”

Participants were asked to identify the three sources that they had “received most of [their] information about coronavirus from in the past seven days” from a list of sixteen. These included official sources such as NHS111, the NHS website and GOV.UK; mainstream media, such as television news, newspapers (print and online) and radio; and unofficial sources, for example, social media sites, search engines and friends and relatives.

Government response

Participants were asked to state to what extent they agreed or disagreed that: “the Government [was] putting the right measures in place to protect the British public from coronavirus;” they felt they were “getting the information [they needed] from the Government and other public authorities on coronavirus;” and they felt they knew what they needed to do “to limit [their] risk of contracting coronavirus.” Participants answered on a five-point Likert scale (“strongly disagree” to “strongly agree”). These questions were asked in all survey waves.

In wave 3, participants completed an adapted form of the Meyer Credibility Index, focussed on assessing the perceived credibility of Government information.14

Efficacy of, and self-efficacy for, behaviours

For each behaviour asked about, the survey included two matching items asking whether participants agreed that the behaviour was “an effective way to prevent the spread of coronavirus” and “how confident are you that, if you wanted to, you could” perform the behaviour. Both were measured on five-point scales from “strongly agree” to “strongly disagree”.

Personal characteristics

Participants were asked to state: their age; gender; whether they had dependent children; whether they themselves or another household member had a chronic illness; their employment status; whether they themselves, a family member, or friend worked for the NHS; their socioeconomic group; and their ethnicity. In wave 3, participants were also asked their highest level of education.

Ethics

This work was conducted as service evaluation of the “Catch it, Bin it, Kill it” campaign and, following advice from the King’s College London Psychiatry, Nursing and Midwifery Research Ethics Subcommittee, was exempt from ethical approval.

Patient and public involvement

Development of the survey items in 2014 was overseen by an advisory group including two lay members.13

Power

A target sample size of 2,000 was used for each wave, allowing a 95% confidence interval of, at most, plus or minus 2.2% for the prevalence estimate for each survey item.

Analysis

We recoded worry about coronavirus as a binary variable, grouping together ‘not at all’, ‘not very’, or ‘somewhat worried’ versus ‘very’ or ‘extremely worried’. We used binary logistic regressions to calculate univariable associations between worry, personal characteristics and perceived risk, with a second set of binary logistic regressions adjusting for all personal characteristics and survey wave. We created a quadratic term for age, to test for a non-linear relationship. As educational status was only asked about in Wave 3, and was not independently associated with worry about coronavirus, we did not control for it in these analyses.

We created a single binary variable indicating whether a participant had done one or more UK Government recommended behaviour “more than usual.” We also created a binary variable indicating whether a participant had reduced the number of people they had met more than usual.

We created a binary variable indicating whether a participant “strongly agreed” or “agreed” that it was best to avoid areas that were heavily populated by Chinese people (versus “strongly disagree”, “disagree” and “neither agree nor disagree”).

We summed scores on the three items asked in Waves 1 to 3 about satisfaction with the Government’s response to give a total score (range 3 to 15, Cronbach’s α=.76) and we summed scores on the four items of the Meyer Credibility Index items (range 4 to 20, Cronbach’s α=.76). Lower scores indicated less satisfaction or less credibility.

We scored knowledge items from +2 (strong agreement with a correct answer) to -2 (strong disagreement with a correct answer) and coded “don’t know” as 0. We summed the items to give a total knowledge score, rescaled to give a score of 1 to 29.

We created separate binary variables to indicate whether participants had received most of their information from official sources, the mainstream media, or unofficial sources. For each information source, participants were said to have used this source if they indicated it as one of their top three sources of information.

To aid interpretation, we created binary variables for perceived efficacy of individual behaviours and self-efficacy for each behaviour, grouping together answers of “strongly agree” and “agree” versus “neither agree nor disagree,” “disagree” and “strongly disagree.”

We used binary logistic regressions to calculate univariable associations between recommended or avoidant behaviour change, personal characteristics, worry, perceived risk, knowledge, information, perception of Government response, perceived efficacy and self-efficacy. We used a second set of logistic regressions adjusting for all personal characteristics (including education). We tested the associations between behaviour, efficacy and self-efficacy individually for each behaviour, using binary logistic regressions including the behaviour and its associated efficacy or self-efficacy item.

We used binary logistic regressions to calculate univariable associations between stigmatising attitudes and personal characteristics, worry, perceived risk, knowledge, information, perception of government response. We used a second set of logistic regressions adjusting for all personal characteristics (including education).

We ran post-hoc logistic regression analyses adjusting for worry about coronavirus as well as personal characteristics for recommended behaviour change, avoidant behaviour and stigmatising attitudes.

Unless stated otherwise, for we recoded answers of “don’t know” as missing data.

The survey method used quota sampling with weightings. In practice, the weights did not substantially affect rates of worry, behaviour, or stigmatising attitudes. Our analyses report unweighted statistics.

Results

## Participants

Personal characteristics of participants are shown in Table 1. There were no significant differences between waves, apart from for age (F(2,6021)=3.6, p=.03), with participants being slightly younger in later survey waves, though not to any meaningful degree.

Table 1. Table showing participants’ personal characteristics by questionnaire wave.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Participant characteristics** | **Level** | **Wave of the questionnaire** | | | |
| **Wave 1 (n=2016)** | **Wave 2 (n=2002)** | **Wave 3 (n=2006)** | **p-value** |
| Gender | Male | 953 (47.5) | 971 (48.8) | 986 (49.4) | .47 |
| Female | 1053 (52.5) | 1020 (51.2) | 1009 (50.6) |  |
| Age† | N, M, SD | N=2016, M=48.5, SD=17.8 | N=2002, M=48.2, SD=18.2 | N=2006, M=48.1, SD=18.5 | .03\* |
| Dependent children | No | 1420 (70.4) | 1391 (69.5) | 1412 (70.4) | .76 |
| Yes | 596 (29.6) | 611 (30.5) | 594 (29.6) |  |
| Chronic illness - self | None | 1406 (70.9) | 1409 (71.6) | 1365 (69.1) | .22 |
| Present | 577 (29.1) | 559 (28.4) | 609 (30.9) |  |
| Chronic illness – other household member | None | 1740 (87.7) | 1699 (86.3) | 1681 (85.2) | .06 |
| Present | 243 (12.3) | 269 (13.7) | 293 (14.8) |  |
| Employment status | Not working | 891 (44.4) | 860 (43.3) | 897 (45.2) | .50 |
| Working | 1115 (55.6) | 1125 (56.7) | 1089 (54.8) |  |
| Work for NHS - self | No | 1093 (94.7) | 1859 (93.7) | 1855 (93.6) | .28 |
| Yes | 106 (5.3) | 124 (6.3) | 126 (6.4) |  |
| Work for NHS – members of my family | No | 1772 (88.2) | 1703 (85.9) | 1728 (87.2) | .09 |
| Yes | 237 (11.8) | 280 (14.1) | 253 (12.8) |  |
| Work for NHS - friends | No | 1796 (89.4) | 1791 (90.3) | 1792 (90.5) | .48 |
| Yes | 213 (10.6) | 192 (9.7) | 189 (9.5) |  |
| Highest educational or professional qualification⸸ | GCSE/vocational/A-level/No formal qualifications | - | - | 1350 (67.3) | - |
| Degree or higher (Bachelors, Masters, PhD) | - | - | 656 (32.7) | - |
| Socioeconomic group (Index of multiple deprivation) | 1st quartile (least deprived) | 457 (22.7) | 436 (21.8) | 453 (22.6) | .92 |
| 2nd quartile | 507 (25.1) | 486 (24.3) | 477 (23.8) |  |
| 3rd quartile | 516 (25.6) | 535 (26.7) | 524 (26.1) |  |
| 4th quartile (most deprived) | 536 (26.6) | 545 (27.2) | 552 (27.5) |  |
| Ethnicity | White | 1850 (92.2) | 1821 (91.4) | 1840 (92.4) | .43 |
| Black and Minority | 156 (7.8) | 172 (8.6) | 151 (7.6) |  |

\*p≤.05

†One-way ANOVA, used as continuous data

⸸Only asked in Wave 3

## Worry

Worry about coronavirus was relatively stable across waves with 20.2% (n=393, wave 1), 18.4% (n=364, wave 2), and 21.8% (n=434, wave 3) of people indicating that they were “very” or “extremely” worried about coronavirus (see supplementary materials). Although rates of worry in Wave 2 were significantly lower than 1 or 3 this difference was small.

Results of univariable and multivariable analyses are reported in Table 2. When controlling for all other personal characteristics, the following were associated with higher likelihood of worry: having dependent children; having a chronic illness (oneself or another household member); being employed; working for the NHS; higher level of deprivation; and belonging to a Black or minority ethnic group. Having a family member working for the NHS was associated with a lower likelihood of worry. Older age was associated with decreased worry in a non-linear manner, with worry declining with increasing age and then flattening. As post-hoc analyses, we used independent samples t-tests to test whether the impact of working for the NHS might be linked to higher knowledge or amount heard about the outbreak. There was a significant difference in knowledge between those working for the NHS (n=126) and not working for the NHS (n=1855), with those who worked for the NHS having lower knowledge scores (t(133.79)=3.92, p<.001). No difference in amount heard about the outbreak was identified.

Perceived risk to oneself and people in the UK were strongly associated with worry. Each increase in perceived risk to oneself (e.g. from “no risk at all perceived” to “minor risk”), increased the odds of being worried 4.06 times (Table 2). Each increase in perceived risk to people in the UK, increased the odds of being worried 4.87 times.

Table 2. Table showing associations between personal characteristics and perceived risk of coronavirus, and worry about coronavirus.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Participant characteristics** | **Level** | **Worry about coronavirus** | | | |
| **Not at all/not very/somewhat worried n=4731, n (%)** | **Very/extremely worried n=1191, n (%)** | **Odds ratio (95% CI)** | **Adjusted odds ratio (95% CI)** |
| Gender | Male | 2295 (79.8) | 582 (20.2) | Reference | Reference |
| Female | 2411 (80.0) | 603 (20.0) | 0.99 (0.87 to 1.12) | 1.01 (0.88 to 1.16) |
| Age | N, M, SD | N=4731, M=50.2, SD=18.0 | N=1191, M=42.6, SD=17.7 | 0.98 (0.97 to 0.98)\* | 0.93 (0.91 to 0.96)\* |
| Age – quadratic (age-mean)2 | - | - | - | - | 3.64 (2.07 to 6.42)\* |
| Dependent children | No | 3459 (83.3) | 694 (16.7) | Reference | Reference |
| Yes | 1272 (71.9) | 497 (28.1) | 1.95 (1.71 to 2.22)\* | 1.53 (1.31 to 1.79)\* |
| Chronic illness - self | None | 3271 (79.4 | 848 (20.6) | Reference | Reference |
| Present | 1390 (81.2) | 321 (18.8) | 0.89 (0.77 to 1.03) | 1.22 (1.04 to 1.43)\* |
| Chronic illness – other household member | None | 4044 (80.3) | 994 (19.7) | Reference | Reference |
| Present | 617 (77.9) | 175 (22.1) | 1.15 (0.96 to 1.38) | 1.26 (1.03 to 1.53)\* |
| Employment status | Not working | 2175 (83.8) | 419 (16.2) | Reference | Reference |
| Working | 2521 (76.7) | 765 (23.3) | 1.58 (1.38 to 1.80)\* | 1.31 (1.11 to 1.55)\* |
| Work for NHS - self | No | 4468 (80.9) | 1052 (19.1) | Reference | Reference |
| Yes | 236 (66.3) | 120 (33.7) | 2.16 (1.72 to 2.72)\* | 1.51 (1.17 to 1.93)\* |
| Work for NHS – members of my family | No | 4081 (79.7) | 1037 (20.3) | Reference | Reference |
| Yes | 623 (82.2) | 135 (17.8) | 0.85 (0.70 to 1.04) | 0.79 (0.64 to 0.97)\* |
| Work for NHS - friends | No | 4243 (80.2) | 1047 (19.8) | Reference | Reference |
| Yes | 461 (78.7) | 125 (31.3) | 1.10 (0.89 to 1.35) | 0.98 (0.79 to 1.23) |
| Highest educational or professional qualification† | GCSE/vocational/A-level/No formal qualifications | 1054 (78.9) | 282 (21.1) | Reference | Reference |
| Degree or higher (Bachelors, Masters, PhD) | 501 (76.7) | 152 (23.3) | 1.13 (0.91 to 1.42) | 1.00 (0.78 to 1.28)⸸ |
| Socioeconomic group (Index of multiple deprivation) | 1st quartile (least deprived) | 1121 (84.5) | 205 (15.5) | Reference | Reference |
| 2nd quartile | 1171 (80.9) | 277 (19.1) | 1.29 (1.06 to 1.58)\* | 1.21 (0.98 to 1.49) |
| 3rd quartile | 1233 (79.5) | 317 (20.5) | 1.41 (1.16 to 1.71)\* | 1.29 (1.05 to 1.59)\* |
| 4th quartile (most deprived) | 1206 (75.5) | 392 (24.5) | 1.78 (1.47 to 2.14)\* | 1.49 (1.22 to 1.82)\* |
| Ethnicity | White | 4442 (82.0) | 974 (18.0) | Reference | Reference |
| Black and Minority | 269 (57.0) | 203 (43.0) | 3.44 (2.83 to 4.18) | 2.50 (2.02 to 3.09)\* |
| Questionnaire wave | Wave 1 | 1557 (79.8) | 393 (20.2) | Reference | Reference |
| Wave 2 | 1619 (81.6) | 364 (18.4) | 0.89 (0.76 to 1.04) | 0.84 (0.71 to 0.99)\* |
| Wave 3 | 1555 (78.2) | 434 (21.8) | 1.11 (0.95 to 1.29) | 1.04 (0.88 to 1.23) |
| Perceived risk to oneself | 5-point Likert-type (1=no risk at all, 5=major risk) | N=4615, M=2.06, SD=0.78 | N=1152, M=3.36, SD=1.07 | 4.12 (3.79 to 4.49)\* | 4.06 (3.71 to 4.45)\* |
| Perceived risk to people in the UK | 5-point Likert-type (1=no risk at all, 5=major risk) | N=4622, M=2.58, SD=0.77 | N=1173, M=3.84, SD=0.92 | 4.96 (4.51 to 5.44)\* | 4.87 (4.41 to 5.38)\* |

\*p≤.05

†Only asked in Wave 3

⸸Does not include survey wave as a co-variate as education was only asked about in Wave 3.

## Recommended behaviours

Eight hundred participants (39.9%) indicated that they had completed one or more Government recommended behaviour “more than usual” in the last seven days, with 1206 (60.1%) reporting no behaviour change.

Results of univariable and multivariable analyses are reported in Tables 3 and 4. Worry about coronavirus was strongly associated with uptake of Government recommended behaviours, followed by having seen or heard information from official sources; having seen recommendations to “Catch it, Bin it, Kill it;” and having seen advice on how to protect oneself and others from coronavirus. Having carried out a recommended behaviour was also associated with: perceived risk from coronavirus (to oneself and people in the UK); perceived severity of coronavirus; increased amount of information heard about coronavirus; having seen or heard information from unofficial sources; increased perceived credibility of the government; and decreased knowledge about coronavirus. When controlling for all other personal characteristics, adopting a Government recommended behaviour was associated with having a dependent child and working for the NHS (self). Younger age was also associated with adopting a Government recommended behaviour in a non-linear manner, with behaviour change declining with increased age, and then flattening.

The perceived efficacy of each behaviour was associated with adopting most of the recommended behaviours, and in particular avoiding people who have symptoms (3.65, 2.62 to 5.07) and limiting the amount you touch your eyes, nose or mouth (3.27, 2.30 to 4.63). Perceived self-efficacy was associated with most behaviours, and particularly limiting the amount you touch your eyes, nose or mouth (2.87, 1.97 to 4.17) and using hand sanitising gel (2.67, 1.70 to 4.19). These analyses can be found in the supplementary materials.

There were no differences in results in post-hoc analyses controlling for worry about coronavirus and personal characteristics.

Table 3. Table showing associations between personal characteristics and behaviour change.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Participant characteristics** | **Level** | **Behaviour change** | | | |
| **Not changed behaviour n=1206, n (%)** | **Completed recommended behaviours more than usual n=800, n (%)** | **Odds ratio (95% CI)** | **Adjusted odds ratio (95% CI)** |
| Gender | Male | 573 (58.1) | 413 (41.9) | Reference | Reference |
| Female | 635 (61.9) | 384 (38.1) | 0.85 (0.71 to 1.02) | 0.86 (0.71 to 1.04) |
| Age | N, M, SD | N=1206, M=48.92, SD=17.83 | N=800, M=46.84, SD=19.45 | 0.99 (0.99 to 1.00)\* | 0.92 (0.89 to 0.95)\* |
| Age – quadratic (age-mean)2 | - | - | - | - | 7.45 (3.53 to 15.70)\* |
| Dependent children | No | 881 (62.4) | 531 (37.6) | Reference | Reference |
| Yes | 325 (54.7) | 269 (45.3) | 1.37 (1.13 to 1.67)\* | 1.39 (1.11 to 1.74)\* |
| Chronic illness - self | None | 830 (60.8) | 535 (39.2) | Reference | Reference |
| Present | 360 (59.1) | 249 (40.9) | 1.07 (0.88 to 1.30) | 1.18 (0.95 to 1.46) |
| Chronic illness – other household member | None | 1015 (60.4) | 666 (39.6) | Reference | Reference |
| Present | 175 (59.7) | 118 (40.3) | 1.03 (0.80 to 1.32) | 1.09 (0.83 to 1.42) |
| Employment status | Not working | 557 (62.1) | 340 (37.9) | Reference | Reference |
| Working | 639 (58.7) | 450 (41.3) | 1.15 (0.96 to 1.38) | 1.23 (0.97 to 1.55) |
| Work for NHS - self | No | 1138 (61.3) | 717 (38.7) | Reference | Reference |
| Yes | 53 (42.1) | 73 (57.9) | 2.19 (1.52 to 3.15)\* | 1.83 (1.24 to 2.70)\* |
| Work for NHS – members of my family | No | 1036 (60.0) | 692 (40.0) | Reference | Reference |
| Yes | 155 (61.3) | 98 (38.7) | 0.95 (0.72 to 1.24) | 0.94 (0.71 to 1.25) |
| Work for NHS - friends | No | 1073 (59.9) | 719 (40.1) | Reference | Reference |
| Yes | 118 (62.4) | 71 (37.6) | 0.90 (0.66 to 1.22) | 0.89 (0.64 to 1.23) |
| Highest educational or professional qualification | GCSE/vocational/A-level/No formal qualifications | 812 (60.1) | 538 (39.9) | Reference | Reference |
| Degree or higher (Bachelors, Masters, PhD) | 394 (60.1) | 262 (39.9) | 1.00 (0.83 to 1.21) | 0.94 (0.77 to 1.15) |
| Socioeconomic group (Index of multiple deprivation) | 1st quartile (least deprived) | 282 (62.3) | 171 (37.7) | Reference | Reference |
| 2nd quartile | 297 (62.3) | 180 (37.7) | 1.00 (0.77 to 1.30) | 0.97 (0.74 to 1.28) |
| 3rd quartile | 301 (57.4) | 223 (42.6) | 1.22 (0.94 to 1.58) | 1.13 (0.87 to 1.48) |
| 4th quartile (most deprived) | 326 (59.1) | 226 (40.9) | 1.14 (0.89 to 1.47) | 1.08 (0.83 to 1.42) |
| Ethnicity | White | 1123 (61.0) | 717 (39.0) | Reference | Reference |
| Black and Minority | 75 (49.5) | 76 (50.3) | 1.59 (1.14 to 2.21)\* | 1.30 (0.91 to 1.87) |

\*p≤.05

Table 4. Table showing associations between worry, perceived risk, knowledge about coronavirus, information about coronavirus, and evaluation of the Government response and behaviour change.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Participant characteristics** | **Level** | **Behaviour change** | | | |
| **Not changed behaviour n=1206, n (%)** | **Completed recommended behaviours more than usual n=800, n (%)** | **Odds ratio (95% CI)** | **Adjusted odds ratio (95% CI)** |
| Worry | Worry | Not at all/not very/somewhat worried | 1026 (66.0) | 529 (34.0) | Reference | Reference |
| Very/extremely worried | 169 (38.9) | 265 (61.1) | 3.04 (2.44 to 3.79)\* | 2.88 (2.28 to 3.65)\* |
| Perceived risk | To oneself | 5-point Likert-type (1=no risk at all, 5=major risk) | N=1171, M=2.26, SD=0.93 | N=785, M=2.71, SD=1.09 | 1.56 (1.42 to 1.71)\* | 1.51 (1.37 to 1.67)\* |
| To people in the UK | 5-point Likert-type (1=no risk at all, 5=major risk) | N=1174, M=2.79, SD=0.89 | N=794, M=3.18, SD=1.03 | 1.53 (1.39 to 1.68)\* | 1.51 (1.37 to 1.68)\* |
| Severity of coronavirus (self) | 5-point Likert (1=strongly disagree, 5=strongly agree) | N=1065, M=3.71, SD=1.13 | N=748, M=3.93, SD=1.03 | 1.21 (1.11 to 1.32)\* | 1.22 (1.11 to 1.34)\* |
| Knowledge | Knowledge | Range 6 to 29 | N=1206, M=19.69, SD=3.60 | N=800, M=18.66, SD=4.09 | 0.93 (0.91 to 0.95)\* | 0.94 (0.92 to 0.97)\* |
| Information | Amount heard | 4-point Likert-type (1=have not seen or heard anything, 4=seen or heard a lot) | N=1198, M=3.26, SD=0.74 | N=798, M=3.39, SD=0.69 | 1.28 (1.13 to 1.46)\* | 1.29 (1.13 to 1.48)\* |
| Information source – official sources | No | 1005 (63.9) | 567 (36.1) | Reference | Reference |
| Yes | 201 (46.3) | 233 (53.7) | 2.05 (1.66 to 2.55)\* | 1.79 (1.42 to 2.26)\* |
| Information source – mainstream media | No | 129 (59.2) | 89 (40.8) | Reference | Reference |
| Yes | 1077 (60.2) | 711 (39.8) | 0.96 (0.72 to 1.27)\* | 1.15 (0.84 to 1.58) |
| Information source – unofficial sources | No | 804 (62.7) | 479 (37.3) | Reference | Reference |
| Yes | 402 (55.6) | 321 (44.4) | 1.34 (1.11 to 1.61)\* | 1.29 (1.04 to 1.59)\* |
| Advice on protection | No | 518 (68.2) | 242 (31.8) | Reference | Reference |
| Yes | 688 (55.2) | 558 (44.8) | 1.74 (1.44 to 2.10)\* | 1.69 (1.39 to 2.06)\* |
| Recommendations to “Catch it, Bin it, Kill it” | No | 612 (67.0) | 301 (33.0) | Reference | Reference |
| Yes | 594 (54.3) | 499 (45.7) | 1.71 (1.42 to 2.05)\* | 1.75 (1.45 to 2.13)\* |
| Government response | Satisfaction with government response | Range 3 to 15 | N=967, M=10.67, SD=2.40 | N=727, M=10.83, SD=2.44 | 1.03 (0.99 to 1.07) | 1.03 (0.99 to 1.07) |
| Credibility of government | Range 4 to 20 | N=836, M=12.84, SD=2.45 | N=647, M=13.3, SD=2.63 | 1.08 (1.03 to 1.12)\* | 1.07 (1.02 to 1.12)\* |

\*p≤.05

## Avoidant behaviour

Two-hundred and seventy-four (13.7%) people indicated that they had reduced the number of people they had met in the last seven days “more than usual.” Four-hundred and ninety (24.4%) had met people as usual; 1125 (56.1%) had not reduced the number of people they had met; and 117 (5.8%) answered “not applicable.”

Results of univariable and multivariable analyses are reported in the supplementary materials. Increased worry; increased perceived risk of coronavirus to oneself and to people in the UK; increased perceived severity of coronavirus to oneself; having seen or heard information from official sources; and having seen recommendations to “Catch it, Bin it, Kill it” were associated with reducing the number of people you had met in the last seven days, as was decreased knowledge about the coronavirus outbreak.

Being from a Black or minority ethnic group or area of greater deprivation (3rd quartile compared to 1st quartile [least deprived]) were associated with reducing the number of people met; as was being male; having dependent children; not having a family member working for the NHS; and not having a friend working for the NHS. Younger age was associated with reducing the number of people met in a non-linear manner, with avoidant behaviour declining with increasing age and then flattening.

In post-hoc-analyses controlling for worry and personal characteristics, associations between avoidant behaviour and age; having a dependent child; socioeconomic status; ethnicity; and perceived severity of coronavirus for oneself were no longer significant.

## Stigmatising attitudes

Five-hundred and twenty-four people (26.1%) agreed that it was best to avoid areas in the UK that were heavily populated by Chinese people; 1290 (64.3%) did not agree and 192 did not know (9.6%).

Results of univariable and multivariable analyses are reported in Tables 5 and 6. Worry about coronavirus had the strongest association with stigmatising attitudes. Perceived risk from coronavirus (to oneself and people in the UK); perceived severity of coronavirus; having seen or heard information from official sources; satisfaction with the UK Government response; and perceived credibility of the UK Government were associated with increased stigmatising attitudes. Increased knowledge and having seen or heard information from mainstream media sources were associated with not engaging in avoidance behaviour more than usual. Having a chronic illness (self); a dependent child; being employed; not having a degree; and being from an area of greater deprivation (4th quartile [most deprived] compared to 1st quartile [least deprived]) were associated with increased stigmatising attitudes. Younger age was associated with increased stigmatising attitudes in a non-linear manner, with stigmatising attitudes declining with increasing age and then flattening.

In post-hoc analyses which adjusted for worry and personal characteristics, employment status; socioeconomic status; and having seen or heard information from official sources were no longer associated with increased stigmatising attitudes.

Table 5. Table showing associations between personal characteristics and stigmatising attitudes.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Participant characteristics** | **Level** | **Because of the coronavirus outbreak, it is best to avoid areas in the UK that are heavily populated by Chinese people** | | | |
| **Neither agree not disagree/disagree/strongly disagree n=1290, n (%)** | **Agree/strongly agree n=524, n (%)** | **Odds ratio (95% CI)** | **Adjusted odds ratio (95% CI)** |
| Gender | Male | 624 (68.6) | 285 (31.4) | Reference | Reference |
| Female | 657 (73.4) | 238 (26.6) | 0.79 (0.65 to 0.97)\* | 0.83 (0.67 to 1.02) |
| Age | N, M, SD | N=1290, M=48.92, SD=18.16 | N=524, M=45.55, SD=19.22 | 0.99 (0.98 to 1.00)\* | 0.93 (0.90 to 0.96)\* |
| Age – quadratic (age-mean)2 | - | - | - | - | 5.61 (2.42 to 13.02)\* |
| Dependent children | No | 932 (73.6) | 334 (26.4) | Reference | Reference |
| Yes | 358 (65.3) | 190 (34.7) | 1.48 (1.19 to 1.84)\* | 1.48 (1.15 to 1.91)\* |
| Chronic illness - self | None | 903 (72.8) | 338 (27.2) | Reference | Reference |
| Present | 371 (67.7) | 177 (32.3) | 1.27 (1.02 to 1.59)\* | 1.51 (1.19 to 1.93)\* |
| Chronic illness – other household member | None | 1093 (71.7) | 432 (28.3) | Reference | Reference |
| Present | 181 (68.6) | 83 (31.4) | 1.16 (0.87 to 1.54) | 1.12 (0.83 to 1.52) |
| Employment status | Not working | 591 (73.7) | 221 (26.3) | Reference | Reference |
| Working | 687 (69.0) | 308 (31.0) | 1.26 (1.02 to 1.54)\* | 1.38 (1.06 to 1.81)\* |
| Work for NHS - self | No | 1204 (72.0) | 468 (28.0) | Reference | Reference |
| Yes | 75 (62.5) | 45 (37.5) | 1.54 (1.05 to 2.27)\* | 1.16 (0.77 to 1.77) |
| Work for NHS – members of my family | No | 1106 (70.6) | 461 (29.4) | Reference | Reference |
| Yes | 173 (76.9) | 52 (23.1) | 0.72 (0.52 to 1.00)\* | 0.72 (0.51 to 1.01) |
| Work for NHS - friends | No | 1143 (70.9) | 469 (29.1) | Reference | Reference |
| Yes | 126 (75.6) | 44 (24.4) | 0.79 (0.55 to 1.13) | 0.75 (0.51 to 1.09) |
| Highest educational or professional qualification | GCSE/vocational/A-level/No formal qualifications | 832 (69.5) | 365 (30.5) | Reference | Reference |
| Degree or higher (Bachelors, Masters, PhD) | 458 (74.2) | 159 (25.8) | 0.79 (0.64 to 0.98)\* | 0.75 (0.59 to 0.95)\* |
| Socioeconomic group (Index of multiple deprivation) | 1st quartile (least deprived) | 309 (75.9) | 98 (24.1) | Reference | Reference |
| 2nd quartile | 327 (72.8) | 122 (27.2) | 1.18 (0.86 to 1.60) | 1.05 (0.76 to 1.44) |
| 3rd quartile | 330 (69.0) | 148 (31.0) | 1.41 (1.05 to 1.91)\* | 1.31 (0.96 to 1.79) |
| 4th quartile (most deprived) | 324 (67.5) | 156 (32.5) | 1.52 (1.13 to 2.04)\* | 1.36 (1.00 to 1.87)\* |
| Ethnicity | White | 1197 (71.8) | 469 (28.2) | Reference | Reference |
| Black and Minority | 82 (60.7) | 53 (39.3) | 1.65 (1.15 to 2.37)\* | 1.45 (0.97 to 2.15) |

\*p≤.05

Table 6. Table showing associations between worry, perceived risk, knowledge about coronavirus, information about coronavirus and evaluation of the government response and stigmatising attitudes.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Participant characteristics** | **Level** | **Because of the coronavirus outbreak, it is best to avoid areas in the UK that are heavily populated by Chinese people** | | | |
| **Neither agree not disagree/disagree/strongly disagree n=1290, n (%)** | **Agree/strongly agree n=524, n (%)** | **Odds ratio (95% CI)** | **Adjusted odds ratio (95% CI)** |
| Worry | Worry | Not at all/not very/somewhat worried | 1101 (77.7) | 316 (22.3) | Reference | Reference |
| Very/extremely worried | 181 (46.8) | 206 (53.2) | 3.97 (3.13 to 5.02)\* | 3.69 (2.86 to 4.75)\* |
| Perceived risk | To oneself | 5-point Likert-type (1=no risk at all, 5=major risk) | N=1268, M=2.29, SD=0.90 | N=514, M=2.81, SD=1.16 | 1.65 (1.49 to 1.83)\* | 1.56 (1.40 to 1.74)\* |
| To people in the UK | 5-point Likert-type (1=no risk at all, 5=major risk) | N=1277, M=2.76, SD=0.87 | N=518, M=3.37, SD=1.06 | 1.94 (1.74 to 2.17)\* | 1.86 (1.66 to 2.09)\* |
| Severity of coronavirus (self) | 5-point Likert (1=strongly disagree, 5=strongly agree) | N=1205, M=2.60, SD=1.12 | N=492, M=4.18, SD=0.94 | 1.72 (1.54 to 1.93)\* | 1.75 (1.55 to 1.98)\* |
| Knowledge | Knowledge | Range 6 to 29 | N=1290, M=20.07, SD=3.40 | N=524, M=17.97, SD=4.55 | 0.86 (0.84 to 0.89)\* | 0.87 (0.84 to 0.89)\* |
| Information | Amount heard | 4-point Likert-type (1=have not seen or heard anything, 4=seen or heard a lot) | N=1286, M=3.34, SD=0.71 | N=523, M=3.36, SD=0.72 | 1.04 (0.90 to 1.20) | 1.01 (0.87 to 1.18) |
| Information source – official sources | No | 1024 (72.7) | 384 (27.3) | Reference | Reference |
| Yes | 266 (65.5) | 140 (34.5) | 1.40 (1.11 to 1.78)\* | 1.33 (1.03 to 1.71)\* |
| Information source – mainstream media | No | 119 (61.3) | 75 (38.7) | Reference | Reference |
| Yes | 1171 (72.3) | 449 (27.7) | 0.61 (0.45 to 0.83)\* | 0.59 (0.42 to 0.83)\* |
| Information source – unofficial sources | No | 828 (71.7) | 327 (28.3) | Reference | Reference |
| Yes | 462 (70.1) | 197 (29.9) | 1.08 (0.87 to 1.33) | 0.87 (0.68 to 1.11) |
| Advice on protection | No | 454 (71.2) | 184 (28.8) | Reference | Reference |
| Yes | 836 (71.1) | 340 (28.9) | 1.00 (0.81 to 1.24) | 1.00 (0.80 to 1.25) |
| Recommendations to “Catch it, Bin it, Kill it” | No | 568 (71.4) | 227 (28.6) | Reference | Reference |
| Yes | 722 (70.9) | 297 (29.1) | 1.03 (0.84 to 1.26) | 1.06 (0.85 to 1.31) |
| Government response | Satisfaction with government response | Range 3 to 15 | N=1132, M=10.70, SD=2.37 | N=466, M=10.96, SD=2.47 | 1.05 (1.00 to 1.10)\* | 1.08 (1.03 to 1.13)\* |
| Credibility of government | Range 4 to 20 | N=1000, M=12.78, SD=2.28 | N=419, M=13.70, SD=2.99 | 1.16 (1.10 to 1.21)\* | 1.17 (1.11 to 1.23)\* |

\*p≤.05

Discussion

Our findings suggest that there is currently moderate public concern about COVID-19 in the UK, with around 20% of the public reporting high levels of worry, and 40% having altered their behaviour in line with UK Government recommendations. The rates of behaviour change are similar to those reported in the early stages of the H1N1 pandemic in a cross-sectional survey of the UK public (37.8%),4 however the rates of worry are higher. In May 2009, at the start of the H1N1 pandemic but following human-to-human transmission being confirmed in the UK, a high level of worry was reported by approximately 14% of the UK population.3 We are not aware of comparable UK data relating to stigmatising attitudes, but our finding that 26% agree with the opinion that it is best to avoid areas of the UK heavily populated by Chinese people is concerning.

Worry was associated with being younger, a parent, having a chronic illness yourself or in your household, being employed, working for the NHS, being from a Black and ethnic minority group and living in a more deprived area of the country. Many of these make intuitive sense, being linked either to classic risk factors for more severe illness from respiratory diseases, to lower perceived access to healthcare systems15 or, in the case of NHS workers, to concerns about the ability of the NHS to cope with a major outbreak. Unexpectedly, NHS workers also had lower knowledge about the outbreak which may have contributed to their higher levels of worry. We are not clear why family members of NHS workers were less worried, but speculate that this may be linked to having greater access to informal medical advice about their personal risk from COVID-19 or to higher perceived access to healthcare services. Unsurprisingly, worry was strongly associated with the perceived risk of COVID-19 to oneself and to people in the UK.

Younger participants, parents, and NHS workers, were more likely to have changed their behaviour. While these groups may be more worried, associations remained even when adjusting for worry in analyses. For NHS workers and parents, increased uptake of recommended behaviours may reflect a greater familiarity with, and habitual use of, hygiene behaviours. Behaviour change was closely linked to emotion, perceptions and information receipt. As in previous outbreaks,4 worry and perceived risk were associated with carrying out both recommended and behaviours that are not currently recommended. Having heard more about COVID-19 was also associated with recommended behaviour change. Receipt of information from almost any source produced this effect, suggesting that the current widespread dissemination of information about COVID-19 may be having a positive effect on behaviour.

Exposure to the “Catch it, Bin it, Kill it” campaign was associated with positive behaviour change, suggesting that the campaign is having some success. Since only 54% of respondents reported having seen the campaign, more widespread coverage may be a first step to improving its effectiveness. Alternatively, it may be that the campaign is not sufficiently eye-catching enough to have been remembered by some participants. The strong associations between some behaviours and their perceived efficacy and self-efficacy suggests that providing messages on how to achieve behaviours and explanations as to why these behaviours work may be a way to boost the campaign’s impact. Messages that focus on the UK Government’s ability to cope with the incident do not appear to have an effect and could be removed from the existing campaign. Deliberate attempts to increase worry or risk perception in order to promote behaviour change are not recommended, as although these variables were associated with recommended behaviours, they were also associated with attempting to avoid others and stigmatising attitudes.

Stigma had a clear pattern of associations with information and knowledge. Higher knowledge was associated with lower stigma and using mainstream media as a key information source was associated with lower stigma. A small but significant set of associations were also found between stigmatising attitudes and use of official information sources, satisfaction in the Government’s response and perceived credibility of the Government. It may be that this relates to the current focus within official communications on advice to people who have recently returned from China. If so, we would expect this effect to dissipate should the focus shift to tackling person-to-person transmission within the UK.

Several limitations should be considered for this study. First, our behavioural outcomes were self-reported. Social desirability and recall bias may have inflated the apparent level of behaviour change that we observed. Whether participants understood the description of the behaviour in the way that we intended is also unclear. For example, does everyone share the same understanding of “thorough handwashing”? Second, while the use of an on-line market research panel is helpful in ensuring data are collected quickly, there are limitations to this approach. People who actively sign up for such panels may not be representative of the general public in terms of, for example, the amount of time they spend on-line and hence the likelihood of them encountering on-line public health campaigns. Third, the cross-sectional nature of the data makes it impossible to be certain about the directions of causality in the associations we have reported. Fourth, given the large number of statistical tests we conducted, Type 1 errors may be apparent in our data and caution is particularly required for associations where the confidence intervals approach one.

Writing on behalf of the World Health Organization’s Scientific and Technical Advisory Group for Infectious Hazards, Heyman and Shindo recently set out eight mitigation strategies for COVID-19.16 The second of these was “enhanced communication strategies that provide general populations and vulnerable populations most at risk with actionable information for self-protection.” Ensuring that “Catch it, Bin it, Kill it” campaign is well disseminated and targets the perceived efficacy of and self-efficacy for behaviours should go some way towards meeting this objective.

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Supplementary materials – questionnaire materials and top-line results

* Questions 1, 2, 3a-c were asked in all survey waves
* Questions 3d-g, 4 to 9 were only asked in survey wave 3

**Questionnaire**

**The following questions are about the current coronavirus outbreak.**

1. **Overall, how worried are you about coronavirus?**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Wave 1, n (%)** | **Wave 2, n (%)** | **Wave 3, n (%)** |
| Extremely worried | 167 (8.6) | 120 (6.1) | 178 (8.9) |
| Very worried | 226 (11.6) | 244 (12.3) | 256 (12.9) |
| Somewhat worried | 707 (36.3) | 677 (34.1) | 731 (36.8) |
| Not very worried | 617 (31.6) | 676 (34.1) | 607 (30.5) |
| Not at all worried | 233 (11.9) | 266 (13.4) | 217 (10.9) |

Wave 1 base, n=1950 (excluding 66 “don’t know”); Wave 2 base, n=1983 (excluding 19 “don’t know”); Wave 3 base, n=1989 (excluding 17 “don’t know”)

1. **To what extent do you think coronavirus poses a risk to:** 
   1. People in the UK?

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Wave 1, n (%)** | **Wave 2, n (%)** | **Wave 3, n (%)** |
| Major risk | 125 (6.5) | 101 (5.2) | 163 (8.3) |
| Significant risk | 279 (14.5) | 252 (12.9) | 353 (17.9) |
| Moderate risk | 657 (34.2) | 703 (35.9) | 711 (36.1) |
| Minor risk | 804 (41.9) | 841 (43.0) | 702 (35.7) |
| No risk at all | 55 (2.9) | 61 (3.1) | 39 (2.0) |

Wave 1 base, n=1920 (excluding 96 “don’t know”); Wave 2 base, n=1945 (excluding 57“don’t know”); Wave 3 base, n=1968 (excluding 38 “don’t know”)

* 1. To you personally?

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Wave 1, n (%)** | **Wave 2, n (%)** | **Wave 3, n (%)** |
| Major risk | 85 (4.4) | 57 (2.9) | 102 (5.2) |
| Significant risk | 127 (6.6) | 159 (8.2) | 191 (9.8) |
| Moderate risk | 337 (17.6) | 383 (19.7) | 446 (22.8) |
| Minor risk | 966 (50.4) | 974 (50.1) | 939 (48.0) |
| No risk at all | 392 (20.4) | 372 (19.1) | 278 (14.2) |

Wave 1 base, n=1917 (excluding 99 “don’t know”); Wave 2 base, n=1958 (excluding 44 “don’t know”); Wave 3 base, n=1956 (excluding 50 “don’t know”)

1. **To what extent do you agree or disagree with the following statements:** 
   1. The Government is putting the right measures in place to protect the British public from coronavirus

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Wave 1, n (%)** | **Wave 2, n (%)** | **Wave 3, n (%)** |
| Strongly agree | 167 (10.0) | 240 (13.8) | 254 (14.4) |
| Agree | 707 (42.4) | 876 (50.2) | 889 (50.5) |
| Neither agree nor disagree | 420 (25.1) | 374 (21.4) | 374 (21.3) |
| Disagree | 241 (14.4) | 184 (10.5) | 180 (10.2) |
| Strongly disagree | 91 (5.4) | 71 (4.1) | 62 (3.5) |

Wave 1 base, n=1676 (excluding 340 “don’t know”); Wave 2 base, n=1745 (excluding 257 “don’t know”); Wave 3 base, n=1759 (excluding 247 “don’t know”)

* 1. I feel that I am getting the information I need from the Government and other public authorities on coronavirus

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Wave 1, n (%)** | **Wave 2, n (%)** | **Wave 3, n (%)** |
| Strongly agree | 141 (7.6) | 205 (11.0) | 182 (9.7) |
| Agree | 642 (34.4) | 793 (42.4) | 863 (46.1) |
| Neither agree nor disagree | 461 (24.7) | 428 (22.9) | 408 (21.8) |
| Disagree | 446 (23.9) | 314 (16.8) | 307 (16.4) |
| Strongly disagree | 175 (9.4) | 131 (7.0) | 112 (6.0) |

Wave 1 base, n= 1865 (excluding 151 “don’t know”); Wave 2 base, n=1871 (excluding 131 “don’t know”); Wave 3 base, n=1872 (excluding 134 “don’t know”)

* 1. I know what I need to do to limit my risk of contracting coronavirus

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Wave 1, n (%)** | **Wave 2, n (%)** | **Wave 3, n (%)** |
| Strongly agree | 227 (12.1) | 284 (15.1) | 319 (16.7) |
| Agree | 751 (40.1) | 892 (47.3) | 971 (51.0) |
| Neither agree nor disagree | 364 (19.5) | 347 (18.4) | 321 (16.9) |
| Disagree | 363 (19.4) | 267 (14.2) | 209 (11.0) |
| Strongly disagree | 166 (8.9) | 94 (5.0) | 85 (4.5) |

Wave 1 base, n=1871 (excluding 145 “don’t know”); Wave 2 base, n=1884 (excluding 118 “don’t know”); Wave 3 base, n=1905 (excluding 101 “don’t know”)

* 1. Information from the Government about coronavirus can be trusted

|  |  |
| --- | --- |
|  | **Wave 3, n (%)** |
| Strongly agree | 200 (11.2) |
| Agree | 868 (48.5) |
| Neither agree nor disagree | 467 (26.1) |
| Disagree | 190 (10.6) |
| Strongly disagree | 66 (3.7) |

Wave 3 base, n=1791 (excluding 215 “don’t know”)

* 1. Information for the Government about coronavirus is accurate

|  |  |
| --- | --- |
|  | **Wave 3, n (%)** |
| Strongly agree | 157 (9.5) |
| Agree | 770 (46.8) |
| Neither agree nor disagree | 492 (29.9) |
| Disagree | 180 (10.9) |
| Strongly disagree | 47 (2.9) |

Wave 3 base, n=1646 (excluding 360 “don’t know”)

* 1. Information from the Government about coronavirus tells the whole story

|  |  |
| --- | --- |
|  | **Wave 3, n (%)** |
| Strongly agree | 125 (7.3) |
| Agree | 500 (29.2) |
| Neither agree nor disagree | 521 (30.5) |
| Disagree | 441 (25.8) |
| Strongly disagree | 123 (7.2) |

Wave 3 base, n=1710 (excluding 296 “don’t know”)

* 1. Information from the Government about coronavirus is biased or one-sided

|  |  |
| --- | --- |
|  | **Wave 3, n (%)** |
| Strongly agree | 103 (6.1) |
| Agree | 361 (21.2) |
| Neither agree nor disagree | 583 (34.3) |
| Disagree | 501 (29.5) |
| Strongly disagree | 152 (8.9) |

Wave 3 base, n=1700 (excluding 306 “don’t know”)

1. **a) How much have you seen or heard about coronavirus in the past 7 days?**

|  |  |
| --- | --- |
|  | **Wave 3, n (%)** |
| I have seen or heard a lot | 914 (45.8) |
| I have seen or heard a fair amount | 817 (40.9) |
| I have seen or heard a little | 242 (12.1) |
| I have not seen or heard anything | 23 (1.2) |

Wave 3 base, n=1996 (excluding 10 “don’t know”)

1. **b) Please tell us for the following options, if you have seen or heard this in the last 7 days…**
   1. Advice on how to protect yourself and others from coronavirus

|  |  |
| --- | --- |
|  | **Wave 3, n (%)** |
| Yes, I have seen or heard this | 1246 (62.1) |
| No, I haven’t seen or heard this | 760 (37.9) |

* 1. Recommendations to “catch it, bin it, kill it”

|  |  |
| --- | --- |
|  | **Wave 3, n (%)** |
| Yes, I have seen or heard this | 1093 (54.5) |
| No, I haven’t seen or heard this | 913 (45.5) |

1. **What three places have you received most of your information about coronavirus from in the past seven days?**

|  |  |  |
| --- | --- | --- |
|  | **Wave 3, n (%)** | **Grouping** |
| Official helplines (e.g. NHS 111) | 31 (1.5) | Official |
| An NHS website (e.g. NHS.UK) | 172 (8.6) | Official |
| GOV.UK or another Government website | 122 (6.1) | Official |
| National TV news | 1216 (60.6) | Mainstream media |
| Regional TV news | 512 (25.5) | Mainstream media |
| National newspapers (in print) | 353 (17.6) | Mainstream media |
| Regional or local newspapers (in print) | 104 (5.2) | Mainstream media |
| Online news websites (e.g. Guardian, Daily Mail) | 493 (24.6) | Mainstream media |
| Social media sites (e.g. Facebook, Twitter, Instagram) | 461 (23.0) | Social media |
| Search engines (e.g. Google) | 201 (10.0) | Social media |
| National radio | 379 (18.9) | Mainstream media |
| Local radio | 192 (9.6) | Mainstream media |
| Friends/relatives | 241 (12.0) | Social media |
| An NHS GP practice, clinic or hospital | 145 (7.2) | Official |
| Leaflets | 26 (1.3) | Official |
| Posters | 48 (2.4) | Official |
| Other [open end] | 82 (4.1) |  |

(Answer was multi-code, so percentages add to more than 100%, base for all =2006)

1. **For each of the following statements, please tell us to what extent, if at all, you agree or disagree:**
   1. I could catch coronavirus from animals

|  |  |
| --- | --- |
|  | **Wave 3, n (%)** |
| Strongly agree | 154 (10.6) |
| Agree | 403 (27.8) |
| Neither agree nor disagree | 287 (19.8) |
| Disagree | 391 (27.0) |
| Strongly disagree | 214 (14.8) |

Wave 3 base, n=1449 (excluding 557 “don’t know”)

* 1. I could catch coronavirus from packages or products ordered from China

|  |  |
| --- | --- |
|  | **Wave 3, n (%)** |
| Strongly agree | 117 (7.6) |
| Agree | 292 (19.1) |
| Neither agree nor disagree | 293 (19.1) |
| Disagree | 499 (32.6) |
| Strongly disagree | 330 (21.6) |

Wave 3 base, n=1531 (excluding 475 “don’t know”)

* 1. I could catch coronavirus from someone else who has it, even if they do not have any symptoms yet

|  |  |
| --- | --- |
|  | **Wave 3, n (%)** |
| Strongly agree | 809 (44.0) |
| Agree | 842 (45.8) |
| Neither agree nor disagree | 137 (7.4) |
| Disagree | 35 (1.9) |
| Strongly disagree | 17 (0.9) |

Wave 3 base, n=1840 (excluding 166 “don’t know”)

* 1. Coronavirus would be a serious illness for me

|  |  |
| --- | --- |
|  | **Wave 3, n (%)** |
| Strongly agree | 558 (30.8) |
| Agree | 670 (37.0) |
| Neither agree nor disagree | 309 (17.0) |
| Disagree | 220 (12.1) |
| Strongly disagree | 56 (3.1) |

Wave 3 base, n=1813 (excluding 193 “don’t know”)

* 1. It is likely that I have some natural immunity to coronavirus

|  |  |
| --- | --- |
|  | **Wave 3, n (%)** |
| Strongly agree | 77 (5.1) |
| Agree | 270 (18.0) |
| Neither agree nor disagree | 445 (29.7) |
| Disagree | 416 (27.8) |
| Strongly disagree | 290 (19.4) |

Wave 3 base, n=1498 (excluding 508 “don’t know”)

* 1. There is a vaccine available to protect against coronavirus

|  |  |
| --- | --- |
|  | **Wave 3, n (%)** |
| Strongly agree | 64 (4.1) |
| Agree | 117 (7.4) |
| Neither agree nor disagree | 200 (12.7) |
| Disagree | 538 (34.2) |
| Strongly disagree | 652 (41.5) |

Wave 3 base, n=1571 (excluding 435 “don’t know”)

* 1. Antibiotics are an effective treatment for coronavirus

|  |  |
| --- | --- |
|  | **Wave 3, n (%)** |
| Strongly agree | 77 (5.3) |
| Agree | 211 (14.6) |
| Neither agree nor disagree | 296 (20.5) |
| Disagree | 420 (29.1) |
| Strongly disagree | 440 (30.5) |

Wave 3 base, n=1444 (excluding 562 “don’t know”)

* 1. It is currently unsafe to come into contact with someone who has been to Wuhan in China in the past 14 days, regardless of whether they seem ill or well.

|  |  |
| --- | --- |
|  | **Wave 3, n (%)** |
| Strongly agree | 890 (47.4) |
| Agree | 706 (37.6) |
| Neither agree nor disagree | 177 (9.4) |
| Disagree | 74 (3.9) |
| Strongly disagree | 30 (1.6) |

Wave 3 base, n=1877 (excluding 129 “don’t know”)

* 1. Because of the coronavirus outbreak, it is best to avoid areas in the UK that are heavily populated by Chinese people

|  |  |
| --- | --- |
|  | **Wave 3, n (%)** |
| Strongly agree | 208 (11.5) |
| Agree | 316 (17.4) |
| Neither agree nor disagree | 396 (21.8) |
| Disagree | 524 (28.9) |
| Strongly disagree | 370 (20.4) |

Wave 3 base, n=1814 (excluding 192 “don’t know”)

1. **In the past seven days have you…**
   1. Washed your hands thoroughly and regularly with soap and water

|  |  |
| --- | --- |
|  | **Wave 3, n (%)** |
| Done this, same amount as usual | 1362 (67.9) |
| Done this, more than usual | 465 (23.2) |
| Not done this | 147 (7.3) |
| Not applicable | 32 (1.6) |

* 1. Carried tissues with you when out and about

|  |  |
| --- | --- |
|  | **Wave 3, n (%)** |
| Done this, same amount as usual | 1152 (57.4) |
| Done this, more than usual | 300 (15.0) |
| Not done this | 496 (24.7) |
| Not applicable | 58 (2.9) |

* 1. Used tissues when sneezing or coughing

|  |  |
| --- | --- |
|  | **Wave 3, n (%)** |
| Done this, same amount as usual | 1252 (62.4) |
| Done this, more than usual | 301 (15.0) |
| Not done this | 305 (15.2) |
| Not applicable | 148 (7.4) |

* 1. ***If yes to previous question:*** Put tissues in the bin after use

|  |  |
| --- | --- |
|  | **Wave 3, n (%)** |
| Done this, same amount as usual | 1202 (77.4) |
| Done this, more than usual | 269 (17.3) |
| Not done this | 66 (4.2) |
| Not applicable | 16 (1.0) |

Base, n=1553 (excluding 453 not asked)

* 1. Limited the amount you touch your eyes, nose or mouth

|  |  |
| --- | --- |
|  | **Wave 3, n (%)** |
| Done this, same amount as usual | 736 (36.7) |
| Done this, more than usual | 323 (16.1) |
| Not done this | 893 (44.5) |
| Not applicable | 54 (2.7) |

* 1. Cleaned or disinfected surfaces you might touch (such as door knobs or hard surfaces)

|  |  |
| --- | --- |
|  | **Wave 3, n (%)** |
| Done this, same amount as usual | 845 (42.1) |
| Done this, more than usual | 312 (15.6) |
| Not done this | 799 (39.8) |
| Not applicable | 50 (2.5) |

* 1. Carried sanitising hand gel with you when out and about

|  |  |
| --- | --- |
|  | **Wave 3, n (%)** |
| Done this, same amount as usual | 613 (30.6) |
| Done this, more than usual | 280 (14.0) |
| Not done this | 1033 (51.5) |
| Not applicable | 80 (4.0) |

* 1. Used sanitising hand gel to clean your hands

|  |  |
| --- | --- |
|  | **Wave 3, n (%)** |
| Done this, same amount as usual | 814 (40.6) |
| Done this, more than usual | 377 (18.8) |
| Not done this | 751 (37.4) |
| Not applicable | 64 (3.2) |

* 1. Tried to avoid people who have a cough or runny nose

|  |  |
| --- | --- |
|  | **Wave 3, n (%)** |
| Done this, same amount as usual | 675 (33.6) |
| Done this, more than usual | 389 (19.4) |
| Not done this | 822 (41.0) |
| Not applicable | 120 (6.0) |

* 1. Reduced the number of people you meet

|  |  |
| --- | --- |
|  | **Wave 3, n (%)** |
| Done this, same amount as usual | 490 (24.4) |
| Done this, more than usual | 274 (13.7) |
| Not done this | 1125 (56.1) |
| Not applicable | 117 (5.8) |

1. **For each of the following statements, please tell us to what extent, if at all, you agree or disagree:**

An effective way to prevent the spread of coronavirus is to…

* 1. Reduce the number of people you meet

|  |  |
| --- | --- |
|  | **Wave 3, n (%)** |
| Strongly agree | 289 (15.1) |
| Agree | 661 (34.4) |
| Neither agree nor disagree | 613 (31.9) |
| Disagree | 301 (15.7) |
| Strongly disagree | 55 (2.9) |

Wave 3 base, n=1919 (excluding 87 “don’t know”)

* 1. Clean or disinfect surfaces that you might touch (such as door knobs or hard surfaces)

|  |  |
| --- | --- |
|  | **Wave 3, n (%)** |
| Strongly agree | 543 (28.0) |
| Agree | 936 (48.3) |
| Neither agree nor disagree | 363 (18.7) |
| Disagree | 81 (4.2) |
| Strongly disagree | 15 (0.8) |

Wave 3 base, n=1938 (excluding 68 “don’t know”)

* 1. Wash your hands thoroughly and regularly with soap and water

|  |  |
| --- | --- |
|  | **Wave 3, n (%)** |
| Strongly agree | 973 (49.5) |
| Agree | 837 (42.6) |
| Neither agree nor disagree | 119 (6.1) |
| Disagree | 31 (1.6) |
| Strongly disagree | 5 (0.3) |

Wave 3 base, n=1965 (excluding 41 “don’t know”)

* 1. Use sanitising hand gel to clean your hands

|  |  |
| --- | --- |
|  | **Wave 3, n (%)** |
| Strongly agree | 599 (30.9) |
| Agree | 998 (51.4) |
| Neither agree nor disagree | 258 (13.3) |
| Disagree | 73 (3.8) |
| Strongly disagree | 12 (0.6) |

Wave 3 base, n=1940 (excluding 66 “don’t know”)

* 1. Cough or sneeze into tissues, instead of your hands

|  |  |
| --- | --- |
|  | **Wave 3, n (%)** |
| Strongly agree | 924 (47.0) |
| Agree | 844 (43.0) |
| Neither agree nor disagree | 143 (7.3) |
| Disagree | 43 (2.2) |
| Strongly disagree | 11 (0.6) |

Wave 3 base, n=1965 (excluding 41 “don’t know”)

* 1. Put tissues in the bin after you have used them

|  |  |
| --- | --- |
|  | **Wave 3, n (%)** |
| Strongly agree | 894 (45.8) |
| Agree | 867 (44.4) |
| Neither agree nor disagree | 133 (6.8) |
| Disagree | 47 (2.4) |
| Strongly disagree | 13 (0.7) |

Wave 3 base, n=1954 (excluding 52 “don’t know”)

* 1. Limit the amount you touch your eyes, nose or mouth

|  |  |
| --- | --- |
|  | **Wave 3, n (%)** |
| Strongly agree | 473 (24.9) |
| Agree | 850 (44.7) |
| Neither agree nor disagree | 434 (22.8) |
| Disagree | 123 (6.5) |
| Strongly disagree | 20 (1.1) |

Wave 3 base, n=1900 (excluding 106 “don’t know”)

* 1. Avoid people who have symptoms such as a cough or runny nose

|  |  |
| --- | --- |
|  | **Wave 3, n (%)** |
| Strongly agree | 481 (24.8) |
| Agree | 899 (46.3) |
| Neither agree nor disagree | 394 (20.3) |
| Disagree | 147 (7.6) |
| Strongly disagree | 20 (1.0) |

Wave 3 base, n=1941 (excluding 65 “don’t know”)

* 1. Keep away from crowded places generally

|  |  |
| --- | --- |
|  | **Wave 3, n (%)** |
| Strongly agree | 378 (19.5) |
| Agree | 890 (46.0) |
| Neither agree nor disagree | 435 (22.5) |
| Disagree | 190 (9.8) |
| Strongly disagree | 43 (2.2) |

Wave 3 base, n=1936 (excluding 70 “don’t know”)

1. **For the following statements, please tell us to what extent, if at all, you agree or disagree:**

How confident are you that, if you wanted to, you could…

1. Reduce the number of people you meet

|  |  |
| --- | --- |
|  | **Wave 3, n (%)** |
| Strongly agree | 429 (21.9) |
| Agree | 733 (37.5) |
| Neither agree nor disagree | 434 (22.2) |
| Disagree | 306 (15.6) |
| Strongly disagree | 55 (2.8) |

Wave 3 base, n=1957 (excluding 49 “don’t know”)

1. Keep surfaces that you might touch clean or disinfected

|  |  |
| --- | --- |
|  | **Wave 3, n (%)** |
| Strongly agree | 714 (36.1) |
| Agree | 942 (47.7) |
| Neither agree nor disagree | 221 (11.2) |
| Disagree | 86 (4.4) |
| Strongly disagree | 13 (0.7) |

Wave 3 base, n=1976 (excluding 30 “don’t know”)

1. Wash your hands thoroughly and regularly with soap and water

|  |  |
| --- | --- |
|  | **Wave 3, n (%)** |
| Strongly agree | 1063 (53.5) |
| Agree | 786 (39.6) |
| Neither agree nor disagree | 110 (5.5) |
| Disagree | 18 (0.9) |
| Strongly disagree | 9 (0.5) |

Wave 3 base, n=1986 (excluding 20 “don’t know”)

1. Carry sanitising hand gel with you when out and about

|  |  |
| --- | --- |
|  | **Wave 3, n (%)** |
| Strongly agree | 765 (38.9) |
| Agree | 815 (41.1) |
| Neither agree nor disagree | 264 (13.4) |
| Disagree | 102 (5.2) |
| Strongly disagree | 23 (1.2) |

Wave 3 base, n=1969 (excluding 37 “don’t know”)

1. Use hand sanitising gel to clean your hands

|  |  |
| --- | --- |
|  | **Wave 3, n (%)** |
| Strongly agree | 810 (41.0) |
| Agree | 892 (45.2) |
| Neither agree nor disagree | 202 (10.2) |
| Disagree | 56 (2.8) |
| Strongly disagree | 14 (0.7) |

Wave 3 base, n=1974 (excluding 32 “don’t know”)

1. Carry tissues with you when out and about

|  |  |
| --- | --- |
|  | **Wave 3, n (%)** |
| Strongly agree | 991 (50.2) |
| Agree | 799 (40.4) |
| Neither agree nor disagree | 146 (7.4) |
| Disagree | 30 (1.5) |
| Strongly disagree | 10 (0.5) |

Wave 3 base, n=1976 (excluding 30 “don’t know”)

1. Put tissues in the bin after you have used them

|  |  |
| --- | --- |
|  | **Wave 3, n (%)** |
| Strongly agree | 1093 (55.4) |
| Agree | 736 (37.3) |
| Neither agree nor disagree | 109 (5.5) |
| Disagree | 24 (1.2) |
| Strongly disagree | 10 (0.5) |

Wave 3 base, n=1972 (excluding 34 “don’t know”)

1. Limit the amount you touch your eyes, nose or mouth

|  |  |
| --- | --- |
|  | **Wave 3, n (%)** |
| Strongly agree | 627 (32.0) |
| Agree | 867 (44.3) |
| Neither agree nor disagree | 322 (16.4) |
| Disagree | 130 (6.6) |
| Strongly disagree | 13 (0.7) |

Wave 3 base, n=1959 (excluding 47 “don’t know”)

1. Avoid people who have symptoms such as a cough or runny nose

|  |  |
| --- | --- |
|  | **Wave 3, n (%)** |
| Strongly agree | 497 (25.2) |
| Agree | 773 (39.3) |
| Neither agree nor disagree | 387 (19.7) |
| Disagree | 269 (13.7) |
| Strongly disagree | 43 (2.2) |

Wave 3 base, n=1969 (excluding 37 “don’t know”)

## Supplementary materials – efficacy of, and self-efficacy for, behaviours

Table 1. Table showing frequency of people stating that a behaviour was efficacious or that they could carry out the behaviour if they wanted.

|  |  |  |  |
| --- | --- | --- | --- |
| Perceived efficacy of behaviour | Not efficacious, n (valid %) | Efficacious, n (valid %) | Missing, n (total valid) |
| Reduce the number of people you meet | 969 (50.5) | 950 (49.5) | 87 (1919) |
| Clean or disinfect surfaces that you might touch (such as door knobs or hard surfaces) | 459 (23.7) | 1479 (76.3) | 68 (1938) |
| Wash your hands thoroughly and regularly with soap and water | 155 (7.9) | 1810 (92.1) | 41 (1965) |
| Use sanitising hand gel to clean your hands | 343 (17.7) | 1597 (82.3) | 66 (1940) |
| Cough or sneeze into tissues, instead of your hands | 197 (10.0) | 1768 (90.0) | 41 (1965) |
| Put tissues in the bin after you have used them | 193 (9.9) | 1761 (90.1) | 52 (1954) |
| Limit the amount you touch your eyes, nose or mouth | 577 (30.4) | 1323 (69.6) | 106 (1900) |
| Avoid people who have symptoms such as a cough or runny nose | 561 (28.9) | 1380 (71.1) | 65 (1941) |
| Keep away from crowded places generally | 668 (34.5) | 1268 (65.5) | 70 (1936) |
| Self-efficacy for a behaviour | **Could not carry out behaviour, n (valid %)** | **Could carry out behaviour, n (valid %)** | **Missing, n** |
| Reduce the number of people you meet | 795 (40.6) | 1162 (59.4) | 49 (1957) |
| Keep surfaces that you might touch clean or disinfected | 320 (16.2) | 1656 (83.8) | 30 (2006) |
| Wash your hands thoroughly and regularly with soap and water | 137 (6.9) | 1849 (93.1) | 20 (1986) |
| Carry sanitising hand gel with you when out and about | 389 (19.8) | 1580 (80.2) | 37 (1969) |
| Use hand sanitising gel to clean your hands | 272 (13.8) | 1702 (86.2) | 32 (1974) |
| Carry tissues with you when out and about | 186 (9.4) | 1790 (90.6) | 30 (1976) |
| Put tissues in the bin after you have used them | 143 (7.3) | 1829 (92.7) | 34 (1972) |
| Limit the amount you touch your eyes, nose or mouth | 465 (23.7) | 1494 (76.3) | 47 (1959) |
| Avoid people who have symptoms such as a cough or runny nose | 699 (35.5) | 1270 (64.5) | 37 (1969) |

Table 2. Table showing associations between perceived efficacy of individual behaviours and uptake of individual behaviours

|  |  |  |
| --- | --- | --- |
| Statement (behaviour number) | OR (95%) with relevant behaviour | aOR (95% CI) with relevant behaviour† |
| Reduce the number of people you meet (10) | 4.60 (3.38 to 6.25)\* | 4.70 (3.38 to 6.55)\* |
| Avoid people who have symptoms such as a cough or runny nose (9) | 3.30 (2.41 to 4.53)\* | 3.62 (2.60 to 5.03)\* |
| Keep away from crowded places generally (10) | 3.11 (2.22 to 4.36)\* | 3.40 (2.37 to 4.89)\* |
| Limit the amount you touch your eyes, nose or mouth (5) | 3.12 (2.23 to 4.36)\* | 3.22 (2.27 to 4.57)\* |
| Use sanitising hand gel to clean your hands (8) | 2.53 (1.73 to 3.70)\* | 2.78 (1.85 to 4.17)\* |
| Clean or disinfect surfaces that you might touch (such as door knobs or hard surfaces) (6) | 2.58 (1.80 to 3.70)\* | 2.64 (1.81 to 3.87)\* |
| Put tissues in the bin after you have used them (4) | 1.61 (0.97 to 2.66) | 1.84 (1.09 to 3.12)\* |
| Cough or sneeze into tissues, instead of your hands (3) | 1.14 (0.75 to 1.75) | 1.36 (0.86 to 2.15) |
| Wash your hands thoroughly and regularly with soap and water (1) | 1.14 (0.76 to 1.70) | 1.29 (0.84 to 1.97) |

† Adjusting for all personal characteristics

Table 3. Table showing associations between self-efficacy for individual behaviours and uptake of individual behaviours

|  |  |  |
| --- | --- | --- |
| Statement (behaviour number) | OR (95%) with relevant behaviour | aOR (95% CI) with relevant behaviour† |
| Reduce the number of people you meet (10) | 2.73 (2.02 to 3.70)\* | 2.95 (2.13 to 4.08)\* |
| Limit the amount you touch your eyes, nose or mouth (5) | 2.69 (1.88 to 3.86)\* | 2.83 (1.94 to 4.13)\* |
| Use hand sanitising gel to clean your hands (8) | 2.44 (1.60 to 3.72)\* | 2.69 (1.71 to 4.23)\* |
| Avoid people who have symptoms such as a cough or runny nose (9) | 2.14 (1.65 to 2.77)\* | 2.13 (1.63 to 2.79)\* |
| Keep surfaces that you might touch clean or disinfected (6) | 1.52 (1.05 to 2.19)\* | 1.69 (1.14 to 2.51)\* |
| Carry sanitising hand gel with you when out and about (7) | 1.65 (1.15 to 2.38)\* | 1.51 (1.03 to 2.22)\* |
| Carry tissues with you when out and about (2) | 1.05 (0.68 to 1.61) | 1.26 (0.79 to 2.01) |
| Put tissues in the bin after you have used them (4) | 0.96 (0.59 to 1.58) | 1.14 (0.67 to 1.91) |
| Wash your hands thoroughly and regularly with soap and water (1) | 0.64 (0.44 to 0.94)\* | 0.77 (0.51 to 1.15) |

† Adjusting for all personal characteristics

Supplementary materials – results of analyses for avoidant behaviour

Table 1. Table showing associations between personal characteristics and reducing the number of people you meet.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Participant characteristics** | **Level** | **Reducing the number of people you meet** | | | |
| **Not changed behaviour n=1732, n (%)** | **Reduced the number of people you meet more than usual n=274, n (%)** | **Odds ratio (95% CI)** | **Adjusted odds ratio (95% CI)** |
| Gender | Male | 821 (83.3) | 165 (16.7) | Reference | Reference |
| Female | 902 (89.4) | 107 (10.6) | 0.59 (0.45 to 0.77)\* | 0.60 (0.45 to 0.79)\* |
| Age | N, M, SD | N=1732, M=48.64, SD=18.45 | N=274, M=44.63, SD=18.61 | 0.99 (0.98 to 1.00)\* | 0.95 (0.91 to 1.00)\* |
| Age – quadratic (age-mean)2 | - | - | - | - | 2.78 (0.95 to 8.14) |
| Dependent children | No | 1242 (88.0) | 170 (12.0) | Reference | Reference |
| Yes | 490 (82.5) | 104 (17.5) | 1.55 (1.19 to 2.02)\* | 1.41 (1.03 to 1.93)\* |
| Chronic illness - self | None | 1181 (86.5) | 184 (13.5) | Reference | Reference |
| Present | 525 (86.2) | 84 (13.8) | 1.03 (0.78 to 1.36) | 1.27 (0.93 to 1.74) |
| Chronic illness – other household member | None | 1450 (86.3) | 231 (13.7) | Reference | Reference |
| Present | 256 (87.4) | 37 (12.6) | 0.91 (0.63 to 1.32) | 0.92 (0.62 to 1.36) |
| Employment status | Not working | 793 (88.4) | 104 (11.6) | Reference | Reference |
| Working | 920 (84.5) | 169 (15.5) | 1.40 (1.08 to 1.82)\* | 1.22 (0.87 to 1.72) |
| Work for NHS - self | No | 1614 (87.0) | 241 (13.0) | Reference | Reference |
| Yes | 101 (80.2) | 25 (19.8) | 1.66 (1.05 to 2.62)\* | 1.07 (0.65 to 1.77) |
| Work for NHS – members of my family | No | 1484 (85.9) | 244 (14.1) | Reference | Reference |
| Yes | 231 (91.3) | 22 (8.7) | 0.58 (0.37 to 0.92)\* | 0.55 (0.34 to 0.89)\* |
| Work for NHS - friends | No | 1536 (85.7) | 256 (14.3) | Reference | Reference |
| Yes | 179 (94.7) | 10 (5.3) | 0.34 (0.17 to 0.64)\* | 0.29 (0.15 to 0.59)\* |
| Highest educational or professional qualification | GCSE/vocational/A-level/No formal qualifications | 1176 (87.1) | 174 (12.9) | Reference | Reference |
| Degree or higher (Bachelors, Masters, PhD) | 556 (84.8) | 100 (15.2) | 1.22 (0.93 to 1.59) | 1.17 (0.88 to 1.58) |
| Socioeconomic group (Index of multiple deprivation) | 1st quartile (least deprived) | 407 (89.8) | 46 (10.2) | Reference | Reference |
| 2nd quartile | 425 (89.1) | 52 (10.9) | 1.08 (0.71 to 1.65\_ | 0.95 (0.61 to 1.47) |
| 3rd quartile | 432 (82.4) | 92 (17.6) | 1.88 (1.29 to 2.75)\* | 1.66 (1.12 to 2.47)\* |
| 4th quartile (most deprived) | 468 (84.8) | 84 (15.2) | 1.59 (1.08 to 2.33)\* | 1.41 (0.94 to 2.11) |
| Ethnicity | White | 1605 (87.2) | 235 (12.8) | Reference | Reference |
| Black and Minority | 115 (76.2) | 36 (23.8) | 2.14 (1.44 to 3.18)\* | 1.83 (1.18 to 2.83)\* |

\*p≤.05

†p=.10

Table 2. Table showing associations between worry, perceived risk, knowledge about coronavirus, information about coronavirus and evaluation of the Government response and reducing the number of people you meet.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Participant characteristics** | **Level** | **Reducing the number of people you meet** | | | |
| **Not changed behaviour n=1732, n (%)** | **Reduced the number of people you meet more than usual n=274, n (%)** | **Odds ratio (95% CI)** | **Adjusted odds ratio (95% CI)** |
| Worry | Worry | Not at all/not very/somewhat worried | 1414 (90.9) | 141 (9.1) | Reference | Reference |
| Very/extremely worried | 306 (70.5) | 128 (29.5) | 4.19 (3.20 to 5.49)\* | 3.76 (2.79 to 5.07)\* |
| Perceived risk | To oneself | 5-point Likert-type (1=no risk at all, 5=major risk) | N=1685, M=2.35, SD=0.97 | N=271, M=2.96, SD=1.14 | 1.70 (1.51 to 1.92)\* | 1.65 (1.45 to 1.88)\* |
| To people in the UK | 5-point Likert-type (1=no risk at all, 5=major risk) | N=1696, M=2.86, SD=0.93 | N=272, M=3.49, SD=1.05 | 1.88 (1.65 to 2.14)\* | 1.83 (1.59 to 2.11)\* |
| Severity of coronavirus (self) | 5-point Likert (1=strongly disagree, 5=strongly agree) | N=1555, M=3.77, SD=1.11 | N=258, M=4.01, SD=0.98 | 1.24 (1.09 to 1.41)\* | 1.26 (1.09 to 1.45)\* |
| Knowledge | Knowledge | Range 6 to 29 | N=1732, M=19.52, SD=3.71 | N=274, M=17.75, SD=4.28 | 0.89 (0.86 to 0.92)\* | 0.90 (0.87 to 0.94)\* |
| Information | Amount heard | 4-point Likert-type (1=have not seen or heard anything, 4=seen or heard a lot) | N=1723, M=3.31, SD=0.72 | N=273, M=3.32, SD=0.74 | 1.02 (0.85 to 1.22) | 1.02 (0.84 to 1.23) |
| Information source – official sources | No | 1387 (88.2) | 185 (11.8) | Reference | Reference |
| Yes | 345 (79.5) | 89 (20.5) | 1.93 (1.46 to 2.56)\* | 1.78 (1.31 to 2.44)\* |
| Information source – mainstream media | No | 179 (82.1) | 39 (17.9) | Reference | Reference |
| Yes | 1553 (86.9) | 235 (13.1) | 0.69 (0.48 to 1.01) | 0.83 (0.54 to 1.25) |
| Information source – unofficial sources | No | 1116 (87.0) | 167 (13.0) | Reference | Reference |
| Yes | 616 (85.2) | 107 (14.8) | 1.16 (0.89 to 1.51) | 0.95 (0.70 to 1.28) |
| Advice on protection | No | 671 (88.3) | 89 (11.7) | Reference | Reference |
| Yes | 1061 (85.2) | 185 (14.8) | 1.31 (1.00 to 1.72)\* | 1.29 (0.97 to 1.73) |
| Recommendations to “catch it, bin it, kill it” | No | 811 (88.8) | 102 (11.2) | Reference | Reference |
| Yes | 921 (84.3) | 172 (15.7) | 1.48 (1.14 to 1.93)\* | 1.47 (1.11 to 1.94)\* |
| Government response | Satisfaction with government response | Range 3 to 15 | N=1447, M=10.79, SD=2.37 | N=247, M=10.41, SD=2.65 | 0.94 (0.89 to 0.99)\* | 0.95 (0.89 to 1.00)† |
| Credibility of government | Range 4 to 20 | N=1250, M=13.00, SD=2.48 | N=233, M=13.26, SD=2.87 | 1.04 (0.99 to 1.10) | 1.02 (0.96 to 1.08) |

\*p≤.05

†p=.07