



COVID-19
Stress and Health Study



The COVID-19 Stress and Health Study

Spotlight on Ethnicity

(17.08.20)

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Technical Report Produced to Coincide with Public Health England (PHE) National Mental Health, Dementia & Neurology Intelligence Network Spotlight on Ethnicity

TECHNICAL SUMMARY

Background

The following report from the COVID-19 Stress & Health Study examines data collected from the first wave of the study during April 2020. It focuses on factors that may explain, or be related to, differences seen between Black and Ethnic Minority (BAME) and non-BAME respondents on mental health outcomes (depression, anxiety, stress).

We have previously released a preprint (<https://www.medrxiv.org/content/10.1101/2020.05.14.20102012v1>) which reported on mental health differences between BAME and non-BAME participants during the early stages of the COVID-19 pandemic. In that preprint, we reported that BAME respondents reported significantly higher levels of stress than non-BAME respondents (mean: 7.24 vs 6.46, $p=.015$). We also examined whether a number of other psychological factors were associated with mental health outcomes including (perceived loneliness, positive mood, worry about COVID-19 and perceived risk from COVID-19).

In this report we offer further evidence in relation to the following questions:

1. Do perceived loneliness, positive mood, worry about COVID-19, and perceived risk from COVID-19 differ between BAME and non-BAME respondents?
2. Do differences persist even after accounting for participants' age, gender, and occurrence of positive and negative life events that occurred during the pandemic?

Findings: 3,092 participants who identified as white British (n=2,796) or from BAME background (n=296) were included in analyses. Our findings demonstrate that BAME and non-BAME respondents reported very similar levels of perceived risk of contracting COVID-19. Although BAME respondents reported lower levels of positive mood, the differences did not persist when age, gender, and occurrence of negative or positive life events were controlled for. BAME respondents were significantly more lonely and reported greater worry about contracting COVID-19 and these differences remained after controlling for age, gender and occurrence of negative or positive life events.

Approach to Analyses

The majority of participants reported ethnicity status as white British or BAME background (n=3092, 99.9%) while 5 participants preferred not to say. Thus, all analyses were restricted to those who reported their ethnicity status.

Distributions of perceived risk of contracting COVID-19, perceived loneliness, and positive mood were checked visually by histograms. Histogram examination showed that perceived loneliness deviated from a normal distribution however transformation did not show improvement of distribution therefore raw scores were used in all analyses. A non-parametric test (Wilcoxon rank-sum test) was used to explore the differences in perceived loneliness between BAME and non-BAME respondents. ANCOVA analyses involving perceived loneliness should be interpreted with caution. Independent samples t-tests were conducted to explore the differences in levels of perceived risk of contracting COVID-19 and positive mood between BAME and non-BAME respondents. Chi-square tests were conducted to assess the differences in levels of worry about contracting COVID-19 (four categories: no worry, occasional worry, much of time worry, most of time worry), between BAME and non-BAME respondents.

We then explored the BAME/non-BAME differences in perceived risk from COVID-19, perceived loneliness and positive mood after controlling for age, gender and occurrence of negative and positive life events during the pandemic, via ANCOVA analyses. The variable assessing COVID-19 worry was treated as a categorical variable in all models, with “occasional worry” treated as the reference value as this was the most common response. Thus, BAME/non-BAME differences in COVID-19 worry were explored via multinomial logistic regression. Positive and negative life events were separately scored by summing the total number of positive/negative life events reported from a pre-specified list (see Table 2) during the COVID-19 pandemic.

Statistical analyses were performed using STATA (version 16).

Cohort Characteristics by ethnicity

Table 1 presents the demographics of the COVID-19 Stress and Health Study cohort split by ethnicity status (i.e., BAME/non-BAME). Around 10% of respondents in the COVID-19 Stress and Health Study identified as BAME (n=296). The characteristics of BAME and non-BAME participants were broadly similar with the exception of age, gender and marital status, with BAME respondents more likely to be younger, male, single, and from Greater London.

Table 2 presents the proportion of BAME and non-BAME respondents who reported negative/positive life events due to COVID-19.

Table 1: Cohort Demographics by BAME status (n=3092)

	BAME group	Non-BAME group
	n (%)	n (%)
N	296 (9.6%)	2796 (90.4%)
Gender		
Male	74 (25.0%)	400 (14.3%)
Female	221 (74.7%)	2396 (85.7%)
Prefer not to say	1 (0.34%)	0
Mean age (SD)	36.9 (12.9)	45.4 (15.0)
Age groups (years)		
18-24	64 (21.7%)	300 (10.7%)
25-34	83 (28.1%)	442 (15.8%)
35-44	67 (22.7%)	569 (20.4%)
45-54	46 (15.6%)	644 (23.0%)
55-64	24 (8.1%)	546 (19.5%)
65-71	11 (3.7%)	246 (8.8%)
≥75	0	48 (1.7%)
Ethnicity		
White – British, Irish, other	0	2796 (100%)
Asian/Asian British – Indian, Pakistani, Bangladeshi, other	119 (40.2%)	N/A
Black/Black British – Caribbean, African, other	42 (14.2%)	N/A
Chinese/Chinese British	28 (9.5%)	N/A
Mixed race – White and Black/Black British	19 (6.4%)	N/A
Middle Eastern/Middle Eastern British – Arab, Turkish, other	23 (7.8%)	N/A
Mixed race – other	40 (13.5%)	N/A
Other ethnic group	25 (8.5%)	N/A
Relationship status		
Single, never married	115 (38.9%)	458 (16.4%)
Single, divorced or widowed	19 (6.4%)	224 (8.7%)
In a relationship/married but living apart	29 (9.8%)	225 (8.1%)
In a relationship/married and cohabiting	129 (43.6%)	1850 (66.2%)
Prefer not to say	4 (1.4%)	19 (0.7%)

Education (highest level of attainment)

No qualifications	2 (0.7%)	31 (1.1%)
Completed GSCE/CSE/O-levels or equivalent	9 (3.0%)	243 (8.7%)
Completed post-16 vocational course	1 (0.3%)	100 (3.6%)
A-levels or equivalent (at school until aged 18)	30 (10.1%)	372 (13.3%)
Undergraduate degree or professional qualification	134 (45.3%)	1169 (41.8%)
Postgraduate degree	116 (39.2%)	860 (30.8%)
Prefer not to say	4 (1.4%)	21 (0.8%)

Place of residence

South West England	11 (3.7%)	229 (8.2%)
East Midlands	82 (27.7%)	680 (24.3%)
Yorkshire and Humber	12 (4.1%)	281 (10.1%)
North East	20 (6.8%)	126 (4.5%)
East of England	6 (2.0%)	147 (5.3%)
North West	25 (8.5)	332 (11.9%)
South East England	34 (11.5%)	380 (13.6%)
Greater London	77 (26.0%)	251 (9.0%)
West Midlands	24 (8.1%)	141 (5.0%)
Northern Ireland	0	8 (0.3%)
Wales	1 (0.3%)	72 (2.6%)
Scotland	4 (1.4%)	149 (5.3%)

Keyworker status

Health, social care or relevant related support worker	125 (42.2%)	1072 (38.3%)
Teacher or childcare worker still travelling in to work	3 (1.0%)	66 (2.4%)
Transport worker still travelling in to work	3 (1.0%)	1 (0.04%)
Food chain worker (e.g. production, sale, delivery)	2 (0.7%)	30 (1.1%)
Key public services worker (e.g. justice staff, religious staff, public service journalist or mortuary worker)	2 (0.7%)	20 (0.7%)
Local or national government worker delivering essential public services	1 (0.3%)	39 (1.4%)
Utility worker (e.g. energy, sewerage, postal service)	1 (0.3%)	4 (0.1%)
Public safety or national security worker	1 (0.3%)	10 (0.4%)
Worker involved in medicines or protective equipment production or distribution	1 (0.3%)	9 (0.3%)
Other 'key worker' role not listed	14 (4.7%)	154 (5.5%)
None of these	144 (48.7%)	1391 (49.8%)

Living alone

Living alone	47 (15.9%)	358 (12.8%)
Living with others	249 (84.1%)	2438 (87.2%)

Covid-19 risk status

Most at risk (e.g. suffering from advanced cancer, severe asthma/COPD, etc.)	18 (6.1%)	101 (3.6%)
At increased risk (e.g., being pregnant, aged over 70, etc.)	29 (9.8%)	499 (17.9%)
Not at-risk	249 (84.1%)	2196 (78.5%)

Table 2 Proportion of BAME/non-BAME respondents who experienced a list of major life events due to COVID-19^a

	BAME n (%)	Non-BAME n (%)
Negative life events	215 (72.6%)	1681 (60.1%)
Death of a spouse/ partner/ close relative or friend	23 (7.8%)	117 (4.2%)
Major health event for you or a loved one requiring hospitalisation	24 (8.1%)	86 (3.1%)
You or your partner losing your job	18 (6.1%)	166 (5.9%)
Change in financial status for the worse (e.g. hours of employment reduced)	59 (19.9%)	580 (20.7%)
Change in living conditions for the worse	35 (11.8%)	266 (9.5%)
Change in personal relations for the worse	56 (18.9%)	466 (16.7%)
Positive life events	78 (26.4%)	545 (19.5%)
Gaining new employment	11 (3.7%)	60 (2.2%)
Change in financial status for the better (e.g. earning more money)	17 (5.7%)	105 (3.8%)
Change in living conditions for the better	19 (6.4%)	164 (5.9%)
Change in personal relations for the better	31 (10.5%)	216 (7.7%)
None of the above	134 (45.3%)	1430 (51.1%)

^aQuestion in the survey: Due to the COVID-19 outbreak, have the following events happened (please select all the options that apply).

Do psychological characteristics associated with mental health outcomes differ by ethnicity status?

Results of independent samples t-tests comparing psychological factors between BAME and non-BAME respondents are shown in Table 3. These showed that BAME respondents reported similar levels of perceived risk of COVID-19 but significantly lower levels of positive mood, compared with non-BAME respondents. Results from a Wilcoxon rank-sum test showed that BAME respondents also had significantly higher levels of perceived loneliness.

To compare levels of COVID-19 worry, a Chi-square test showed that COVID-19 worry differed between BAME and non-BAME respondents ($\chi^2=22.8$, $p<0.001$). As shown in Table 3, BAME respondents were more likely to either not worry or spend much of most of time worrying about getting COVID-19 whereas non-BAME respondents were more likely to occasionally worry about getting COVID-19.

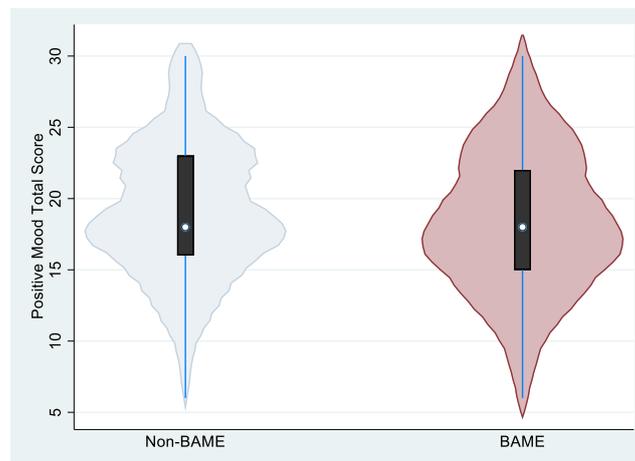
These ethnicity differences are also presented in Figure 1-4.

Table 3 Parametric and non-parametric tests and chi-square test showing differences in psychological characteristics between BAME and non-BAME participants

	BAME	non-BAME		
	mean (SD)	mean (SD)	t	p
Positive mood	18.3 (5.5)	19.1 (5.0)	2.5	0.011*
Perceived risk of getting COVID-19	4.7 (2.5)	4.8 (2.2)	0.2	0.858
			z	p
Perceived loneliness	4.5 (3.0)	3.8 (2.7)	-3.9	<0.001***
	n (%)	n (%)	X ²	p
COVID-19 worry				
"I do not worry about getting COVID-19"	59 (19.9%)	452 (16.2%)	11.1	0.011*
"I occasionally worry about getting COVID-19"	175 (59.1%)	1875 (67.1%)		
"I spend much of time worrying about getting COVID-19"	44 (14.9%)	368 (13.2%)		
"I spend most of time worrying about getting COVID-19"	19 (6.4%)	101 (3.6%)		

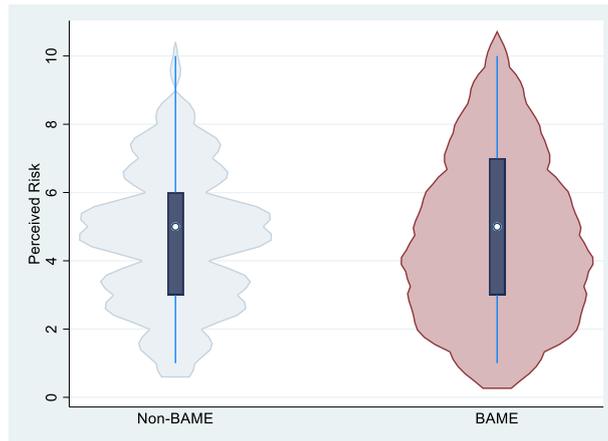
*** p<0.001, ** p<0.01, * p<0.05

Figure 1 Violin plot of positive mood scores by ethnicity status^a



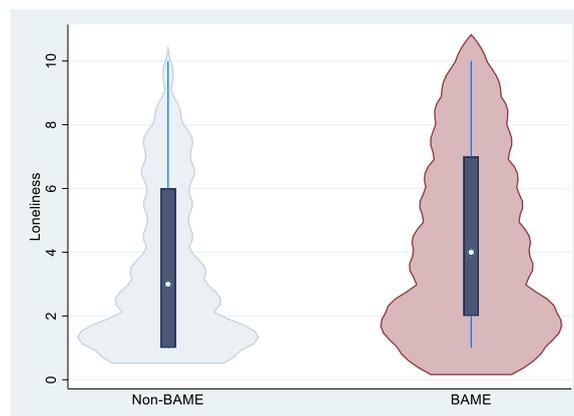
^a Violin plot showing the distributions of positive mood total scores among BAME and non-BAME respondents: the white dot in the centre of each plot represents the median of positive mood total score. The thick black bar in the centre of each plot represents the interquartile range of positive mood total score. The thin blue line in each plot represents the rest of the distribution excluding outliers. The kernel density estimation of each plot shows the distribution shape of the data, with wider sections representing a higher probability that respondents will take on the given value and skinnier sections representing a lower probability.

Figure 2 Violin plot of perceived risk scores by ethnicity status^a



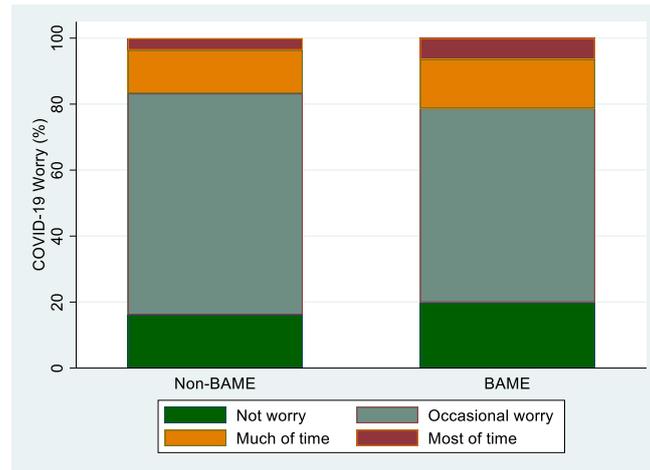
^aViolin plot showing the distributions of measure of perceived risk among BAME and non-BAME respondents: the white dot in the centre of each plot represents the median. The thick black bar in the centre of each plot represents the interquartile range. The thin blue line in each plot represents the rest of the distribution excluding outliers. The kernel density estimation of each plot shows the distribution shape of the data, with wider sections representing a higher probability that respondents will take on the given value and skinnier sections representing a lower probability.

Figure 3 Violin plot of perceived loneliness scores by ethnicity status^a



^aViolin plot showing the distributions of measure of loneliness among BAME and non-BAME respondents: the white dot in the centre of each plot represents the median. The thick black bar in the centre of each plot represents the interquartile range. The thin blue line in each plot represents the rest of the distribution excluding outliers. The kernel density estimation of each plot shows the distribution shape of the data, with wider sections representing a higher probability that respondents will take on the given value and skinnier sections representing a lower probability.

Figure 4 Bar graph of proportion of respondents expressing COVID-19 worry by ethnicity status



Do ethnic differences persist even after accounting for participants’ age, gender, and occurrence of positive and negative life events that occurred during the pandemic?

One-way ANCOVAs were conducted to compare the differences in positive mood, perceived COVID-19 risk, and perceived loneliness between BAME and non-BAME respondents whilst controlling for age, gender, and negative/positive life events. BAME and non-BAME respondents did not differ significantly in positive mood [$F(5, 3084)=2.75, p=0.10$], after controlling for age, gender, negative life events, and positive life events.

BAME and non-BAME respondents did not differ significantly in perceived risk [$F(5, 2488)=0.08, p=0.78$] after controlling for age, gender, negative life events, and positive life events.

There was a significant difference in perceived loneliness between BAME and non-BAME respondents [$F(5, 3084)=7.13, p=0.008$], after controlling for age, gender, negative life events, and positive life events.

Multinomial logistic regression was used to examine the strength of the association between ethnicity (BAME/non-BAME) and COVID-19 worry (each category compared with occasional worry), after controlling for age, gender (male/female), and number of positive and negative life events (see Table 4).

After controlling for age, gender, and life events BAME respondents continued to be more likely to worry “most of the time” about COVID-19 than non-BAME respondents.

Table 4: Multinomial logistic regression model showing differences in COVID-19 worry between BAME and non-BAME participants after controlling for age, gender, and positive and negative life events

	RRR^b	95% CI Lower	95% CI Upper	z	p
“Not Worry”^a					
BAME background	1.11	0.81	1.53	0.64	0.52
Female	0.72	0.56	0.93	-2.55	0.01*
Age (per decade)	0.78	0.73	0.84	-6.79	<0.001***
Negative life events	0.96	0.85	1.08	-0.70	0.48
Positive life events	0.94	0.77	1.14	-0.66	0.51
“Much of time”^a					
BAME background	1.32	0.92	1.89	1.53	0.13
Female	1.76	1.24	2.50	3.17	0.002**
Age (per decade)	0.98	0.91	1.06	-0.40	0.69
Negative life events	1.30	1.16	1.47	4.35	<0.001***
Positive life events	0.95	0.77	1.18	-0.43	0.67
“Most of time”^a					
BAME background	2.05	1.21	3.50	2.65	0.008**
Female	1.83	0.99	3.38	1.92	0.055
Age (per decade)	0.97	0.85	1.11	-0.41	0.68
Negative life events	1.58	1.31	1.89	4.87	<0.001***
Positive life events	0.76	0.49	1.16	-1.28	0.20

Observations

3,090

*** p<0.001, ** p<0.01, * p<0.05

^a Comparison reference group “I occasionally worry about getting COVID-19”.

^b Relative Risk Ratio