


# BMJ Open A cross-sectional study of the association of age, gender, education and economic status with individual perceptions of governmental response to COVID-19

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## ABSTRACT

**Objective** We assessed the impact of key population variables (age, gender, income and education) on perceptions of governmental effectiveness in communicating about COVID-19, helping meet needs for food and shelter, providing physical and mental healthcare services, and allocating dedicated resources to vulnerable populations.

**Design** Cross-sectional study carried out in June 2020.

**Participants and setting** 13 426 individuals from 19 countries.

**Results** More than 60% of all respondents felt their government had communicated adequately during the pandemic. National variances ranged from 83.4% in China down to 37.2% in Brazil, but overall, males and those with a higher income were more likely to rate government communications highly. Almost half (48.8%) of the respondents felt their government had ensured adequate access to physical health services (ranging from 89.3% for Singapore to 27.2% for Poland), with higher ratings reported by younger and higher-income respondents. Ratings of mental health support were lower overall (32.9%, ranging from 74.8% in China to around 15% in Brazil and Sweden), but highest among younger respondents. Providing support for basic necessities of food and housing was rated highest overall in China (79%) and lowest in Ecuador (14.6%), with higher ratings reported by younger, higher-income and better-educated respondents across all countries. The same three demographic groups tended to rate their country's support to vulnerable groups more highly than other respondents, with national scores ranging from around 75% (Singapore and China) to 19.5% (Sweden). Subgroup findings are mostly independent of intercountry variations with 15% of variation being due to intercountry differences.

**Conclusions** The tendency of younger, better-paid and better-educated respondents to rate their country's response to the pandemic more highly, suggests that government responses must be nuanced and pay greater attention to the needs of less-advantaged citizens as they continue to address this pandemic.

## INTRODUCTION

The COVID-19 pandemic continues to surge, with more than 100 million cases and

## Strengths and limitations of this study

- At the time it was carried out, this was the first large, multicountry study, to our knowledge, to assess to what degree respondents' age, gender, economic level and education are associated with perceptions of governmental effectiveness in meeting essential public health needs during the COVID-19 pandemic.
- The stage of the pandemic in the respondent's country, as well as the respondent's personal experience with access to and quality of healthcare services, may have influenced the perceived effectiveness of government response to COVID-19.
- Differences in the forms or types of government that exist at national, regional and local levels in the 19 countries could make intercountry comparisons difficult to interpret.
- The samples we surveyed may not adequately represent the most vulnerable populations in each country, as they would be less likely to be able to participate in research of this type.
- This study is cross-sectional and was analysed descriptively, thus the reported associations cannot be interpreted causally.

2.1 million deaths reported as of January 2021.<sup>1</sup> Transmission of SARS-CoV-2 and the severity of its impact on the population have been attributed to various socioecological factors, such as access to healthcare and technology, infrastructure, sustainable basic economic needs, variation in population demographics and implementation of protection measures.<sup>2-6</sup> National responses to the pandemic continue to vary,<sup>7 8</sup> with few countries taking all of the evidence-based actions needed to control the spread of the virus.<sup>9-12</sup> Critical ongoing challenges to an effective governmental response include accurate risk assessment and reporting on viral spread,<sup>13-16</sup> adequate surveillance of cases

when confinement measures are reduced or lifted,<sup>17 18</sup> and rising incidence and mortality where strong containment measures were not applied.<sup>19 20</sup>

Country-level decision-making is paramount to the COVID-19 response, but factors such as gender, age, education level and socioeconomic status may influence an individual's capacity to make health-related decisions, perceive risk, access preventive measures and adopt protective behaviours.<sup>21 22</sup> Moreover, mixed messages concerning the threat, including the severity of the virus, may provoke strong emotional responses, particularly fear and anxiety, which shape an individuals' sense of self-efficacy in adopting the most favourable choices for themselves and/or their families.<sup>23</sup>

In a recently published paper describing how the general population in 19 high-burden countries scored their governments' response to the first wave of the pandemic, trust was correlated with better scores.<sup>6</sup> In this paper, we focus on the associations of four key demographic variables among over 13 000 individual respondents in the same 19-country study. Distinctly from their country's level of economic development and governance structure, these respondents represent a wide range of demographic groups, which are examined independently to determine their association with perceptions of government stewardship, service provision and communication during the pandemic. Given previous studies reporting the ways in which the COVID-19 pandemic has impacted different segments of the population,<sup>24–28</sup> we conducted a post-hoc analysis of the COVID-SCORE data<sup>6</sup> to evaluate to what degree age, education, economic level and gender in populations across national boundaries are associated with their perceptions of five aspects of governmental effectiveness: communicating about the pandemic itself and ways to help control it, providing assistance in meeting needs for food and shelter, addressing physical and mental healthcare needs and allocating resources to support populations with special needs, such as the chronically ill, the elderly, the incarcerated and others with special needs.

## METHODS

We analysed five questions from the COVID-SCORE study pertaining to personal perceptions of one's country's COVID-19 response.<sup>6</sup> In that survey, participants responded to a total of 22 items, which included the 10 COVID-SCORE-10 items and standard demographic questions regarding age, gender, level of education and household income.

### Study participants

The survey was fielded in 19 high-burden countries: Brazil, Canada, China, Ecuador, France, Germany, India, Italy, Mexico, Nigeria, Poland, Russia, Singapore, South Africa, South Korea, Spain, Sweden, the UK and the USA. The 19 countries selected were either among the 25 countries with the highest reported numbers of COVID-19 cases at

the time the study was launched (12 June 2020) or, to ensure geographical representation, had the most cases in a World Health Organization (WHO) region.

Participants were recruited by Emerson College Polling through international online panel providers: Dynata provided 7423 respondents across all 19 countries; Opinion Access provided 3293 respondents from 14 countries; Survey Monkey provided 1941 responses from 12 countries; and Amazon MTurk provided 762 respondents from eight countries. On initial registration, respondents' identities were verified using internet protocol (IP) addresses, as were their mobile phone numbers to ensure that each participant was real and unique. Participants were recruited for the panels via a variety of methods, including online, by telephone and through direct mail solicitation.

### Random stratified sampling

Each country was divided into regions based on city/town, province or state unit of analysis. Strata were established by age, gender and level of education. The number of participants who could enrol in each of these strata was calculated to reflect the distribution in the general population based on census/survey estimates provided by the World Bank and Central Intelligence Agency (CIA) World Factbook. Data were weighted by strata with each stratum requiring a minimum of 50 participants. Further methodological details are described elsewhere.<sup>6</sup>

### Data collection

Survey data were collected between 16 June 2020 and 20 June 2020 from an online panel of 13 426 respondents aged 18 years and older from 19 countries, ranging between 619 and 773 participants per country. We examined the response to five questions from the 22 items collected:

1. 'The government helped me and my family meet our daily needs during the COVID-19 epidemic in terms of income, food and shelter';
2. 'The government communicated clearly to ensure that everyone had the information they needed to protect themselves and others from COVID-19, regardless of socioeconomic level, migrant status, ethnicity, or language';
3. 'The government made sure we always had full access to the healthcare services we needed during the epidemic';
4. 'The government provided special protection to vulnerable groups at higher risk such as the elderly, the poor, migrants, prisoners and the homeless during the COVID-19 epidemic';
5. 'The government provided mental health services to help people suffering from loneliness, depression and anxiety caused by the COVID-19 epidemic'.

All of the responses to these five questions were recorded on a 5-point Likert scale (completely disagree to completely agree). Data for age and income were collected through open text fields. Age was coded into

three categories: 18–29, 30–60 and 61 years and older. Income was categorised as US\$0–8/day, US\$8–US\$32/day and US\$32+/day for comparison on an absolute scale and were based on the Gapminder Institute income levels.<sup>29</sup> Education was categorised into low, medium, high and very high groups. Participants who did not finish a secondary education (high school) were categorised as ‘low’; those who had completed secondary, vocational, technical, professional associate or a high school degree were categorised as ‘medium’; those who had completed a tertiary or bachelor’s degree were categorised as ‘high’; and those who had done postgraduate work were categorised as ‘very high’. Gender was categorised as male or female.

### Ethics statement

This study was approved by Emerson College, USA (Institutional Review Board (IRB) protocol number 20-023 F-E6/12) with an expiration date of 11 June 2021. The online questionnaire was administered by Emerson College to gather information from respondents after obtaining their written, informed consent about the survey and this project. Equitable compensation per survey was applied (US\$2 per complete survey for Mturk data and increased up to US\$3 in some countries) regardless of country being polled to comply with ethical compensation standards. No personally identifiable information was collected or stored.

### Patient and public involvement

Patients or the public were not involved in the design, conduct, reporting or dissemination plans of our research.

### Analysis

We analysed the distribution of the responses to the questions for the entire dataset. We then reported the results for five sets of univariate and multivariable regressions: one for each of the five questions. We also present a set of multilevel regressions with random intercepts to account for clustering of observations in countries. The variance partition coefficient (VPC) was reported to quantify the proportion of the total observed individual variation in the outcomes that is attributable to intercountry differences. We used logistic regression and defined the outcome as 1 if a respondent answered, ‘completely agree’ or ‘somewhat agree’ and 0 if the respondents answered anything else. The independent variables were the four demographic variables: age, gender, income and education. The reference groups were: age 18–29, low income, low education and female.

## RESULTS

We analysed the data from 13 426 individuals from 19 countries. Overall, 53.4% were female and 55.4% were aged 30–60. About a third (36.3%) had a university degree and 63.3% earned above US\$32 a day (table 1).

**Table 1** Descriptive breakdown of data on demographics, and responses to the five selected questions (n=13 423)

	N	%
<b>Demographic characteristic</b>		
<b>Gender</b>		
Female	7171	53.4
Male	6127	45.6
NA	125	0.9
<b>Income level</b>		
US\$0–US\$8 per day	1287	9.6
US\$8–US\$32 per day	3011	22.4
US\$32+	8495	63.3
NA	630	4.7
<b>Education level</b>		
Less than high school (low)	3830	28.5
High school and some college (medium)	4691	34.9
Bachelor (high)	3694	27.5
Postgraduate (very high)	1177	8.8
NA	31	0.2
<b>Age group</b>		
18–29	4022	30.0
30–60	7442	55.4
61+	1959	14.6
<b>Perceptions of COVID-19 response</b>		
The government helped me and my family meet our daily needs during the COVID-19 epidemic in terms of income, food and shelter.		
Completely agree	1681	12.5
Somewhat agree	3649	27.2
Neutral/no opinion	2890	21.5
Somewhat disagree	2201	16.4
Completely disagree	3002	22.4
The government communicated clearly to ensure that everyone had the information they needed to protect themselves and others from COVID-19, regardless of socioeconomic level, migrant status, ethnicity or language.		
Completely agree	3216	24.0
Somewhat agree	4534	33.8
Neutral/no opinion	1936	14.4
Somewhat disagree	2071	15.4
Completely disagree	1666	12.4
The government made sure we always had full access to the healthcare services we needed during the epidemic.		
Completely agree	2650	19.7
Somewhat agree	3901	29.1
Neutral/no opinion	2195	16.4
Somewhat disagree	2428	18.1
Completely disagree	2249	16.8
The government provided special protection to vulnerable groups at higher risk such as the elderly, the poor, migrants, prisoners and the homeless during the COVID-19 epidemic.		
Completely agree	2010	15.0

Continued

Table 1 Continued

	N	%
Somewhat agree	3746	27.9
Neutral/no opinion	2446	18.2
Somewhat disagree	2636	19.6
Completely disagree	2585	19.3
The government provided mental health services to help people suffering from loneliness, depression and anxiety caused by the COVID-19 epidemic.		
Completely agree	1491	11.1
Somewhat agree	2931	21.9
Neutral/no opinion	3437	26.6
Somewhat disagree	2557	19.0
Completely disagree	3007	22.4

Nearly 60% of the respondents said that their country's government had communicated clearly enough to ensure that everyone had the information they needed to protect themselves and others from COVID-19, a finding that was consistent regardless of the respondent's socio-economic level, migrant status, ethnicity or language. More favourable evaluations of governmental response were reported by males and those with higher income levels (US\$8–US\$32 and US\$32+, tables 2 and 3). Nearly 8% of response variation (measured by the VPC) was due to differences between countries, with most positive responses reported in China (83.4%) and least positive responses reported in Brazil (37.2%, figure 1).

Almost half (48.8%) of all respondents agreed that their government had made sure individuals always had full access to the healthcare services needed during the epidemic. Positive responses were reported more frequently by younger (18–29) and high income (US\$32+) individuals. Singapore (83.9%) and China (83.8%) had the highest proportion of positive responses while Poland (27.2%), Russia (28.8%) and Brazil (29.0%) reported the lowest proportion of positive responses (VPC=14.5%).

Outcomes in respect to mental health services were much less positive. Less than a third (32.9%) of all respondents agreed that their government had provided adequate support to people suffering from loneliness, depression and anxiety caused by the COVID-19 pandemic. More positive responses were associated with younger age (18–29). The highest frequency of positive responses was reported in China (74.8%) and least positive responses were reported in Brazil (14.9%) and Sweden (15.5%) (VPC=12.9%).

About two in five (39.7%) respondents said the government had helped individuals and families meet daily needs for income, food and shelter during the COVID-19 pandemic. More positive responses were reported by younger (18–29), better-paid (US\$32+) and better-educated individuals. A fairly substantial, 15%, response variation on this question was attributed to intercountry differences. The country reporting the most positive

responses was China (79.0%), while the least positive responses were reported in Ecuador (14.6%).

A slightly higher proportion (42.9%) of all respondents agreed that their government had provided special protections to vulnerable groups at higher risk such as the elderly, the poor, migrants, prisoners and the homeless during the COVID-19 epidemic. Positive responses were associated with younger age (18–29), high income level (US\$32+) and very high education level. The most positive responses were reported in Singapore (75.4%) and China (75.0%) and least positive responses were reported in Sweden (19.5%) (VPC=10.8%).

## DISCUSSION

This was the first large, multicountry study, to our knowledge, to assess to what degree respondents' age, gender, economic level and education were associated with perceptions of governmental effectiveness in meeting essential public health needs during the COVID-19 pandemic.<sup>6</sup>

Over half of the respondents perceived their government to have communicated information adequately to the public, which was the most positive assessment given to any of the five factors assessed here. Approximately half of the respondents reported that their government had ensured individuals full access to the healthcare services they needed during the pandemic. Somewhat less positive perceptions were observed relative to the remaining three questions, with less than half saying that special protections to vulnerable groups at higher risk and assistance for families to meet daily needs were adequate. The least positive perception (32.9%) was reported in respect to the provision of mental health services to those suffering from loneliness, depression and anxiety due to the COVID-19 pandemic.

The results show a wide range of positive responses to these five questions (32.9%–57.8%) and a variation in the association of demographic factors across the five domains studied. There was a narrow range of variation attributed to intercountry variations in responses; the highest observed was in the perception of governments' ability to meet the daily needs of the population (15%) and the lowest variation attributable to intercountry differences was in regard to governments' perceived ability to communicate effectively (8%). This finding in itself is notable as 85% or more of the variation among a global population's responses on perception on the five domains assessed in this study was independent of country of residence.

Management of COVID-19 is complex and requires an evidence-based multifactorial approach supported by public engagement and trust.<sup>23</sup> Many health systems remain overburdened with the ongoing spread of the virus, and thus community interventions are critical to engage with the general population. Clear communication and public trust in pandemic control measures are essential to ensure compliance with government

**Table 2** ORs for univariable associations when controlling for country

	Univariate regression (95% CIs)	Regression controlled for country via random effects (95% CIs)
Question: The government helped me and my family meet our daily needs during the COVID-19 epidemic in terms of income, food and shelter.		
Age (years)	30–60 vs 18–29 1.14 (1.05, 1.23)	30–60 vs 18–29 1.00 (0.91, 1.09)
	61+ vs 18–29 0.89 (0.80, 1.00)	61+ vs 18–29 0.78 (0.69, 0.89)
Gender	Male vs female 0.92 (0.86, 0.99)	Male vs female 0.92 (0.85, 0.99)
Income	US\$8–US\$32 vs US\$0–US\$8 1.25 (1.08, 1.44)	US\$8–US\$32 vs US\$0–US\$8 1.10 (0.94, 1.29)
	US\$32+ vs US\$0–US\$8 2.05 (1.80, 2.33)	US\$32+ vs US\$0–US\$8 1.40 (1.19, 1.65)
Education	Medium vs low 1.25 (1.15, 1.37)	Medium vs low 1.14 (1.03, 1.26)
	High vs low 1.35 (1.23, 1.48)	High vs low 1.27 (1.14, 1.42)
	Very high vs low 1.61 (1.41, 1.83)	Very high vs low 1.48 (1.27, 1.71)
Question: The government communicated clearly to ensure that everyone had the information they needed to protect themselves and others from COVID-19, regardless of socioeconomic level, migrant status, ethnicity or language.		
Age (years)	30–60 vs 18–29 1.18 (1.09, 1.27)	30–60 vs 18–29 1.14 (1.05, 1.24)
	61+ vs 18–29 1.08 (0.97, 1.21)	61+ vs 18–29 1.12 (1.00, 1.26)
Gender	Male vs female 1.13 (1.05, 1.21)	Male vs female 1.13 (1.04, 1.22)
Income	US\$8–US\$32 vs US\$0–US\$8 1.09 (0.95, 1.24)	US\$8–US\$32 vs US\$0–US\$8 1.46 (1.25, 1.71)
	US\$32+ vs US\$0–US\$8 1.20 (1.07, 1.35)	US\$32+ vs US\$0–US\$8 1.48 (1.27, 1.71)
Education	Medium vs low 1.12 (1.03, 1.22)	Medium vs low 1.04 (0.95, 1.14)
	High vs low 1.10 (1.00, 1.20)	High vs low 1.16 (1.04, 1.28)
	Very high vs low 1.04 (0.91, 1.19)	Very high vs low 1.10 (0.96, 1.27)
Question: The government made sure we always had full access to the healthcare services we needed during the epidemic.		
Age (years)	30–60 vs 18–29 1.01 (0.94, 1.09)	30–60 vs 18–29 0.90 (0.83, 0.98)
	61+ vs 18–29 0.90 (0.81, 1.00)	61+ vs 18–29 0.84 (0.74, 0.94)
Gender	Male vs female 0.96 (0.89, 1.02)	Male vs female 0.95 (0.89, 1.02)
Income	US\$8–US\$32 vs US\$0–US\$8 0.94 (0.82, 1.07)	US\$8–US\$32 vs US\$0–US\$8 0.91 (0.79, 1.06)
	US\$32+ vs US\$0–US\$8 1.52 (1.35, 1.71)	US\$32+ vs US\$0–US\$8 1.14 (0.98, 1.33)
Education	Medium vs low 0.98 (0.90, 1.06)	Medium vs low 0.97 (0.88, 1.06)
	High vs low 0.98 (0.90, 1.07)	High vs low 1.08 (0.97, 1.19)
	Very high vs low 1.08 (0.94, 1.23)	Very high vs low 1.12 (0.97, 1.29)
Question: The government provided special protections to vulnerable groups at higher risk such as the elderly, the poor, migrants, prisoners and the homeless during the COVID-19 epidemic.		

Continued

Table 2 Continued

	Univariate regression (95% CIs)	Regression controlled for country via random effects (95% CIs)
Age (years)	30–60 vs 18–29 1.05 (0.97, 1.13)	30–60 vs 18–29 0.95 (0.87, 1.03)
	61+ vs 18–29 0.83 (0.74, 0.92)	61+ vs 18–29 0.78 (0.69, 0.88)
Gender	Male vs female 1.00 (0.93, 1.07)	Male vs female 0.99 (0.92, 1.06)
Income	US\$8–US\$32 vs US\$0–US\$8 1.25 (1.09, 1.43)	US\$8–US\$32 vs US\$0–US\$8 1.13 (0.97, 1.31)
	US\$32+ vs US\$0–US\$8 1.51 (1.33, 1.70)	US\$32+ vs US\$0–US\$8 1.22 (1.05, 1.42)
Education	Medium vs low 1.17 (1.07, 1.28)	Medium vs low 1.13 (1.03, 1.24)
	High vs low 1.19 (1.09, 1.30)	High vs low 1.16 (1.05, 1.29)
	Very high vs low 1.23 (1.08, 1.41)	Very high vs low 1.26 (1.09, 1.46)
Question: The government provided mental health services to help people suffering from loneliness, depression and anxiety caused by the COVID-19 epidemic.		
Age (years)	30–60 vs 18–29 1.02 (0.94, 1.10)	30–60 vs 18–29 0.90 (0.83, 0.99)
	61+ vs 18–29 0.80 (0.71, 0.90)	61+ vs 18–29 0.75 (0.66, 0.85)
Gender	Male vs female 0.98 (0.91, 1.05)	Male vs female 0.98 (0.91, 1.06)
Income	US\$8–US\$32 vs US\$0–US\$8 0.99 (0.86, 1.15)	US\$8–US\$32 vs US\$0–US\$8 0.99 (0.84, 1.16)
	US\$32+ vs US\$0–US\$8 1.34 (1.18, 1.53)	US\$32+ vs US\$0–US\$8 1.06 (0.90, 1.25)
Education	Medium vs low 1.16 (1.05, 1.27)	Medium vs low 1.01 (0.91, 1.11)
	High vs low 1.11 (1.01, 1.23)	High vs low 1.13 (1.02, 1.27)
	Very high vs low 1.04 (0.91, 1.20)	Very high vs low 1.05 (0.90, 1.22)

mitigation strategies and effectively reduce this burden.<sup>30</sup> However, different groups in society (eg, women and men, older and younger people, the wealthy and the poor, persons with disabilities, children, single parents, minority groups, etc) are all affected differently and to varying degrees. While governments are working on the implementation of effective control measures, the spread of the virus continues to increase and its impact continues to fall disproportionately on vulnerable populations, who have less access to services and who as ‘essential workers’ are exposed to the virus in transit or at work.<sup>31 32</sup> Further, the intersectional implications of the COVID-19 pandemic have exacerbated existing structural inequalities, in particular for women from marginalised groups.<sup>33</sup>

Indeed, advanced age, lower educational attainment and lower income were all associated with a less positive perception across the majority of the five questions analysed in this study. While younger, lower-income workers are more likely to have lost their job due to COVID-19, education is shown to be protective among young

people, in addition to their reduced medical vulnerability to the virus relative to older individuals.<sup>34</sup> Therefore, it is unsurprising that regardless of a respondent’s country of residence, those with lower levels of education and income consistently perceived their governments’ actions to ensure their daily needs of income, food and shelter to be inadequate. Conversely, only the highest income tier reported that their country’s healthcare services have been fully accessible during the pandemic. This is expected given that wealthier individuals have better access to communication channels and may be in a better position to adapt to job insecurity and financial hardships, and thus require less governmental assistance.<sup>35</sup> The pandemic has amplified inequalities and widened the gap between the rich and the poor; existing social protection systems may be inadequate to support vulnerable populations due to limited effectiveness and often complex eligibility restrictions.<sup>36</sup> It is important to ensure the ability of disenfranchised and disempowered populations to access services whether through universal

**Table 3** ORs for multivariable associations when controlling for country

	<b>Multivariable regression (95% CIs)</b>	<b>Multivariable regression controlled for country via random effects (95% CIs)</b>
<b>Question: The government helped me and my family meet our daily needs during the COVID-19 epidemic in terms of income, food and shelter.</b>		
Age (years)	30–60 vs 18–29 1.00 (0.92, 1.08)	30–60 vs 18–29 0.95 (0.87, 1.04)
	61+ vs 18–29 0.78 (0.70, 0.88)	61+ vs 18–29 0.77 (0.67, 0.87)
Gender	Male vs female 0.94 (0.88, 1.02)	Male vs female 0.94 (0.87, 1.03)
Income	US\$8–US\$32 vs US\$0–US\$8 1.25 (1.08, 1.45)	US\$8–US\$32 vs US\$0–US\$8 1.10 (0.93, 1.30)
	US\$32+ vs US\$0–US\$8 2.04 (1.78, 2.33)	US\$32+ vs US\$0–US\$8 1.37 (1.15, 1.63)
Education	Medium vs low 1.20 (1.09, 1.32)	Medium vs low 1.08 (0.97, 1.20)
	High vs low 1.21 (1.09, 1.33)	High vs low 1.18 (1.05, 1.32)
	Very high vs low 1.33 (1.16, 1.53)	Very high vs low 1.37 (1.18, 1.60)
<b>Question: The government communicated clearly to ensure that everyone had the information they needed to protect themselves and others from COVID-19, regardless of socioeconomic level, migrant status, ethnicity or language.</b>		
Age (years)	30–60 vs 18–29 1.11 (1.02, 1.20)	30–60 vs 18–29 1.07 (0.98, 1.17)
	61+ vs 18–29 1.00 (0.90, 1.12)	61+ vs 18–29 1.06 (0.93, 1.20)
Gender	Male vs female 1.15 (1.07, 1.24)	Male vs female 1.16 (1.07, 1.26)
Income	US\$8–US\$32 vs US\$0–US\$8 1.02 (0.89, 1.17)	US\$8–US\$32 vs US\$0–US\$8 1.34 (1.15, 1.56)
	US\$32+ vs US\$0–\$8 1.12 (1.00, 1.27)	US\$32+ vs US\$0–US\$8 1.39 (1.19, 1.63)
Education	Medium vs low 1.09 (0.99, 1.19)	Medium vs low 0.99 (0.89, 1.09)
	High vs low 1.04 (0.94, 1.14)	High vs low 1.09 (0.97, 1.21)
	Very high vs low 0.99 (0.86, 1.13)	Very high vs low 1.06 (0.91, 1.24)
<b>Question: The government made sure we always had full access to the healthcare services we needed during the epidemic.</b>		
Age (years)	30–60 vs 18–29 0.91 (0.84, 0.98)	30–60 vs 18–29 0.85 (0.77, 0.93)
	61+ vs 18–29 0.77 (0.69, 0.86)	61+ vs 18–29 0.78 (0.69, 0.89)
Gender	Male vs female 0.97 (0.90, 1.04)	Male vs female 0.97 (0.89, 1.05)
Income	US\$8–US\$32 vs US\$0–US\$8 0.96 (0.84, 1.09)	US\$8–US\$32 vs US\$0–US\$8 0.92 (0.79, 1.08)
	US\$32+ vs US\$0–US\$8 1.58 (1.40, 1.79)	US\$32+ vs US\$0–US\$8 1.18 (1.01, 1.39)

Continued

Table 3 Continued

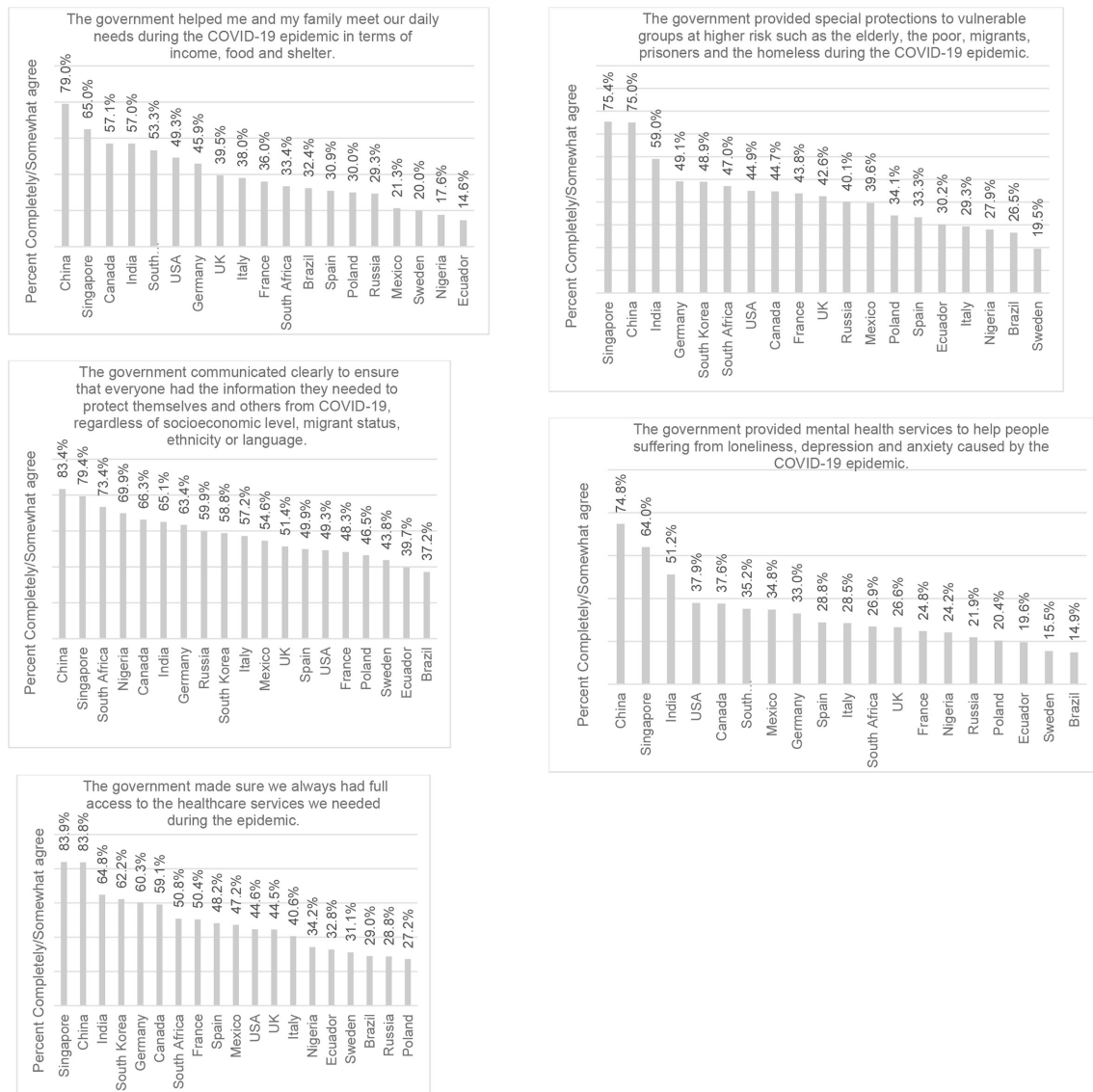
	Multivariable regression (95% CIs)	Multivariable regression controlled for country via random effects (95% CIs)
Education	Medium vs low 0.95 (0.87, 1.04)	Medium vs low 0.94 (0.85, 1.04)
	High vs low 0.88 (0.80, 0.97)	High vs low 1.01 (0.90, 1.13)
	Very high vs low 0.94 (0.82, 1.08)	Very high vs low 1.08 (0.93, 1.26)
Question: The government provided special protections to vulnerable groups at higher risk such as the elderly, the poor, migrants, prisoners and the homeless during the COVID-19 epidemic.		
Age (years)	30–60 vs 18–29 0.98 (0.90, 1.06)	30–60 vs 18–29 0.91 (0.84, 1.00)
	61+ vs 18–29 0.78 (0.68, 0.85)	61+ vs 18–29 0.76 (0.67, 0.86)
Gender	Male vs female 1.00 (0.93, 1.08)	Male vs female 1.00 (0.92, 1.08)
Income	US\$8–US\$32 vs US\$0–US\$8 1.24 (1.08, 1.43)	US\$8–US\$32 vs US\$0–US\$8 1.13 (0.97, 1.32)
	US\$32+ vs US\$0–US\$8 1.51 (1.33, 1.71)	US\$32+ vs US\$0–US\$8 1.21 (1.03, 1.43)
Education	Medium vs low 1.22 (1.03, 1.23)	Medium vs low 1.09 (0.98, 1.20)
	High vs low 1.08 (0.98, 1.19)	High vs low 1.08 (0.97, 1.21)
	Very high vs low 1.10 (0.95, 1.26)	Very high vs low 1.20 (1.03, 1.40)
Question: The government provided mental health services to help people suffering from loneliness, depression and anxiety caused by the COVID-19 epidemic.		
Age (years)	30–60 vs 18–29 0.95 (0.87, 1.04)	30–60 vs 18–29 0.88 (0.80, 0.97)
	61+ vs 18–29 0.73 (0.64, 0.82)	61+ vs 18–29 0.73 (0.64, 0.84)
Gender	Male vs female 0.99 (0.91, 1.06)	Male vs female 0.98 (0.90, 1.07)
Income	US\$8–US\$32 vs US\$0–US\$8 1.02 (0.89, 1.19)	US\$8–US\$32 vs US\$0–US\$8 1.01 (0.86, 1.20)
	US\$32+ vs US\$0–US\$8 1.43 (1.25, 1.63)	US\$32+ vs US\$0–US\$8 1.10 (0.92, 1.31)
Education	Medium vs low 1.12 (1.03, 1.24)	Medium vs low 0.99 (0.88, 1.10)
	High vs low 1.01 (0.92, 1.13)	High vs low 1.08 (0.96, 1.21)
	Very high vs low 0.91 (0.79, 1.06)	Very high vs low 0.99 (0.84, 1.17)

coverage or special emergency plans for expanded eligibility of coverage, or through economic stimulus plans, unemployment relief programmes, welfare and health safeguards and mechanisms to decrease out-of-pocket health spending by vulnerable groups.<sup>37</sup>

A 24-hour media environment has surrounded the COVID-19 pandemic throughout its duration, including TV and radio broadcasts, press briefings, official government

websites and social media sites.<sup>38</sup> Though this multimedia communication has resulted in unprecedented coverage volume, approaches have been uncoordinated,<sup>38</sup> and in several instances inconsistent, contradictory and misinformation has instilled confusion,<sup>39</sup> panic and social disruption among the public, consequently weakening efforts to mitigate the outbreaks.<sup>14 40 41</sup> Our analysis showed that the least educated and poorest respondents rated





**Figure 1** Responses to the five selected questions by country (uploaded as ‘image’).

the clarity and adequacy of government communication on COVID-19 less positively. Responsiveness to health messaging is strongly influenced by media access, with the most vulnerable having the least access and generally the least opportunity to take protective actions (eg, teleworking).<sup>42</sup> Women and younger respondents were also less satisfied with the existing communication strategies compared with men and older people, respectively. These differences are important in the next generation of media campaigns, which should be mindful of gender and age-specific messaging.

Our findings can assist decision-makers in improving their response to the pandemic as inequities in COVID-19 disease outcomes will ultimately be amplified by media-induced dissonance and polarising messages.<sup>39</sup> Authoritative and trustworthy information sources, with clear, understandable and consistent messaging are associated with greater compliance with preventive measures.<sup>43</sup> Governments should ensure transparency, consistency, comprehensibility, coordination and community

engagement while also monitoring the impact of multiple media outlets.<sup>38 41 44</sup> Governments and public health authorities should also strive to communicate proactively, establish trusted leadership, fight false information,<sup>45</sup> provide proper interpretation of scientific evidence, promote health literacy and practice political accountability.<sup>41</sup> We strongly recommend the implementation of media campaigns with key messaging, given that effective health and risk communication can encourage health-protective behaviours among the public, in respect to hygiene practices, the use of facemasks and social distancing as well as in general preventive health actions such as vaccination. Key messages may include, for example, ‘my doctor showed me why it really helps to wear a facemask and taught me the right way to use one’ or ‘the nurse at my clinic explained why vaccination is the best and fastest way to get our lives back to normal’.

The COVID-19 pandemic has exacerbated existing social and economic inequalities with respect to several non-communicable diseases, such as diabetes, asthma

and hypertension, and underscored inequalities in the social determinants of health, which has led to disparities in COVID-19 infection and mortality rates. This issue is syndemic for the most disadvantaged populations, as mutually enhancing health and non-health problems affect the overall health status of the population and individual.<sup>46</sup> Vulnerable groups are susceptible to poorer health and are disproportionately affected during the COVID-19 pandemic; this includes the elderly (especially those with chronic conditions such as cardiovascular disease), the poor, migrants, people who are incarcerated and people who are homeless.<sup>47 48</sup> In our survey, the oldest, poorest and least-educated respondents perceived the governments' protection of the most vulnerable during the pandemic less positively. Effective government responses must be inclusive with regard to containment and mitigation strategies, beginning with adequate communication and inclusive messaging (ie, tailored, health literate and available in different languages, modalities, transparent and wide reaching). Measures to ensure vulnerable populations are addressed may include free testing, facemasks and disinfectant gel, access to clean water for handwashing, adequate access to health services or insurance benefits, social protection measures regardless of their legal status, employment rights (eg, paid sick leave) and accommodating marginalised groups in all cases with traditionally available sources of care close their physical locations.<sup>49</sup> They may also include access to secured housing, food and sustenance for those with financial insecurity and securing the rights of asylum seekers and undocumented migrants.<sup>50</sup> Health equity must be elevated on the public policy agenda to ensure inclusion regardless of age, socioeconomic level, education level, migrant status, ethnicity or language.

The experience of living through the COVID-19 pandemic and its associated government sanctions negatively influences the mental well-being of the population.<sup>51-53</sup> Increases in the prevalence of anxiety and depression resulting from social isolation and loneliness, and concerns of financial difficulties and other implications of the pandemic have been observed. The lack of a positive response in the survey suggests that individuals did not feel supported during the pandemic. A recent study has shown that those who perceived a lack of emotional support during the COVID-19 pandemic are at an increased risk of anxiety and depression symptoms and thus, the inadequacy and/or lack of specialised mental healthcare during a pandemic should be addressed to ensure public confidence in the government.<sup>22 54</sup> The need for mental health services and challenges to access have been recognised by others, particularly among vulnerable groups in low-income and middle-income countries (eg, those in poverty, those with financial insecurity, front-line workers and those suffering loss of employment).<sup>55-57</sup> A previous study on public perceptions showed that those who believe that their government's response was insufficient suffered from lower mental well-being during the COVID-19 pandemic.<sup>58</sup> Conversely, strong government actions (eg, regional and nationwide lockdowns, at the start

of the pandemic) were linked to better mental well-being and an improvement in government perception,<sup>58</sup> which can be attributed to, for example, the social connectedness experienced during a lockdown as this has been shown to buffer the effects of stress.<sup>51</sup> Lack of efforts to address mental health challenges and restore well-being may impact future productivity and economic recovery, globally.

### Limitations

This study has limitations that warrant mention. First, the stage of the pandemic in the respondent's country, as well as the respondent's personal experience with access to and quality of healthcare services, may well have influenced the perceived efficacy of government response to COVID-19. Second, differences in the forms or types of government that exist at national, regional and local levels in the 19 countries could make intercountry comparisons difficult to interpret. Indeed, some respondents may have feared that their government would illegally access their responses to our survey, which could also have skewed the findings. Third, the samples we surveyed may not adequately represent the most vulnerable populations in each country, as they would be less likely to be able to participate in social research of this type. Finally, this study is cross-sectional and was analysed descriptively, thus no causal inferences can be made.

### CONCLUSION

This 19-country study found a high percentage of measurable variations across socioeconomic groups, independent of intercountry variation, with regard to respondents' perception of their government's response to the challenges of the COVID-19 pandemic. Advanced age, lower educational attainment and lower income were all associated with a less positive perception of an effective governmental response. Notably, the failure to provide adequate mental healthcare services and emotional support to the public must be addressed to achieve an effectual pandemic response. These findings should be taken into account as governments continue to seek to reduce the burden of COVID-19 and ultimately end the pandemic.

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