

COVID-19 Comparing racial health disparities in pandemics a decade apart: H1N1 and COVID-19

Authors: Prathayini Paramanathan,^A Muhammad Abbas,^B Sajjad Ali Huda,^C Sameena Huda,^D Mehran Mortazavi^E and Parastoo Taravati^F

ABSTRACT

Background and aims

The Centers for Disease Control and Prevention has reported disproportionate health disparities with respect to disease for Blacks/African Americans (AAs) compared to Whites in the USA. In this paper, we identify and compare the factors involved in creating these disparities among these populations during the 2009 H1N1 and current COVID-19 pandemics.

Methods

We included studies describing health disparities towards Blacks/AAs in the USA during the H1N1 and COVID-19 pandemics. Only observational empirical studies with free full-text availability in English from PubMed, PubMed Central and Google Scholar were included.

Results

A total of 31 papers were included: 19 pertaining to the H1N1 pandemic and 12 to the COVID-19 pandemic. Qualitative analysis for health disparities resulted in 43 different factors, which were subdivided into nine overarching themes.

Discussion

The similarities that exist between the two pandemics indicate that there are many neglected issues in American healthcare that need to be addressed. The listed factors have led to disparities in screening and treating for disease resulting in disparities in infection rates, severity of illness and mortality. This calls for a change in healthcare dynamics to improve access to healthcare, remove any form of possible discrimination, and regain the lost trust with the Black/AA communities, repairing historical damage.

Conclusions

Effective utilisation of social media and faith-based centres to educate patients, implementation of new policies improving access to healthcare, and culture-sensitive education for healthcare providers are suggested to decrease health disparities and improve health outcomes across the USA.

KEYWORDS: coronavirus, COVID-19, SARS-CoV-2, H1N1, ethnicity, racial disparities

DOI: 10.7861/fhj.2021-0030

Introduction and background

Coronavirus disease 2019 (COVID-19) is an infectious disease caused by the severe acute respiratory syndrome coronavirus 2 (SARS-COV-2), which began as an outbreak in Wuhan, China and quickly reached pandemic proportions by March 2020. This pandemic primarily affects adults over the age of 65 years, whereas the 2009 H1N1 pandemic primarily affected children and young-to-middle-aged adults.^{1,2} H1N1 had an incubation period of 1.5–3 days and a mortality rate of less than 0.5%,³ while COVID-19 has an incubation period of 2–14 days and a mortality rate of 2–3%.⁴ Between April 2009 and April 2010, the Centers for Disease Control and Prevention (CDC) estimated that there were 60.8 million cases of H1N1 with 274,304 hospitalisations and 12,469 deaths in the USA. American Indians, Hispanic Latinos and non-Hispanic Blacks had the highest hospitalisation rates at 32.7, 30.7 and 29.7 per 100,000 people respectively.⁵ At the time of writing this article, there were 1.6 million cases of COVID-19 with Hispanic Americans, non-Hispanic Blacks, and Hispanic Latinos having the highest hospitalisation rates at 231, 202.2 and 192.8 per 100,000 people respectively.¹ Treatment modalities for H1N1 included supportive therapy, medications such as oseltamivir (Tamiflu) and zanamivir (Relenza), and vaccinations.^{6,7} At the time of conducting this review, multiple treatment options for COVID-19 had been suggested for efficacy with numerous vaccines still under development and consideration for the public.^{8,9}

Health disparities towards those who identify as Blacks or African Americans (AAs) have been in existence for over many decades in the USA. The CDC has reported that they bear a disproportionate burden of disease, injury, disability and death from certain health

Authors: ^AMD candidate, All Saints University College of Medicine, Saint Vincent and the Grenadines, and clinical research coordinator, McMaster University, Canada; ^BMD candidate, Avalon University School of Medicine, Curacao; ^CMD candidate, Avalon University School of Medicine, Curacao, and Canadian pharmacist, Kingston University, London, UK; ^DMD candidate, Avalon University School of Medicine, Curacao; ^EMD candidate, Saint James School of Medicine, Saint Vincent and Grenadines; ^FMD candidate, Saint James School of Medicine, Saint Vincent and the Grenadines, and public health extern, Illinois Academy of Family Physicians, Chicago, USA

conditions. In addition, risk factors, incidence, morbidity and mortality are often higher among Blacks/AAs than Whites for some of the leading causes of death.¹⁰ Although COVID-19 is novel, speculations regarding Black/AA vulnerability have been made, in addition to being reported in preliminary studies.¹¹ These studies also suggest some reasons for this vulnerability, and the factors seem to echo the inequality faced by Blacks/AAs in previous outbreaks. In recent history, the 2009 H1N1 pandemic was similar in its transmission and effect to the current COVID-19 pandemic. It is for this reason that we seek to identify and compare the inequalities in healthcare between the H1N1 and COVID-19 pandemics, which have occurred a decade apart. To our knowledge, there has been no such study that examines the current literature while screening for and comparing possible factors contributing to health disparities among Blacks/AAs in the USA during a single outbreak. Analysing the two outbreaks may provide some insight on whether or not there has been an improvement in the quality of care in the American healthcare system over the course of the decade, particularly for Blacks/AAs. We hypothesised that access to care will be the most cited factor contributing to health disparities due to the ever-changing privatised insurance policies in the USA.

Methods

Search strategy

All of the authors searched PubMed, PubMed Central and Google Scholar for a period of 1 week from 15 June 2020 to 27 June 2020. The search terms are described below. The authors screened abstracts for the inclusion criteria. Thereafter, the included studies were screened using the full text of the articles. Working in pairs, all authors extracted reasons or factors that were cited in the included studies for health disparities towards Blacks/AAs. When consensus was lacking among pairs, other authors were consulted. The factors were standardised and categorised into overarching themes.

Search terms

The following search terms were used: (((Blacks OR African Americans OR Africans) AND (racial disparities OR ethnic disparities OR black white disparities OR health disparities OR disparities)) AND (COVID-19 OR SARS-CoV2 OR influenza virus OR H1N1 OR swine flu))

Inclusion and exclusion criteria

We included studies describing health disparities towards Blacks/AAs in the USA during the H1N1 and COVID-19 pandemics. Included studies were observational empirical studies, in English, with free full-text availability. Study designs that were eligible for inclusion were qualitative, cross-sectional, case-control and cohort studies. Other publications such as books, chapters, comments, editorials, letters, narrative reviews and reflections were not included.

Consent

Patients and the public were not involved in the design, conduct, or reporting of this research.

Results

A total of 31 papers were included in this study,¹²⁻⁴² 19 pertaining to

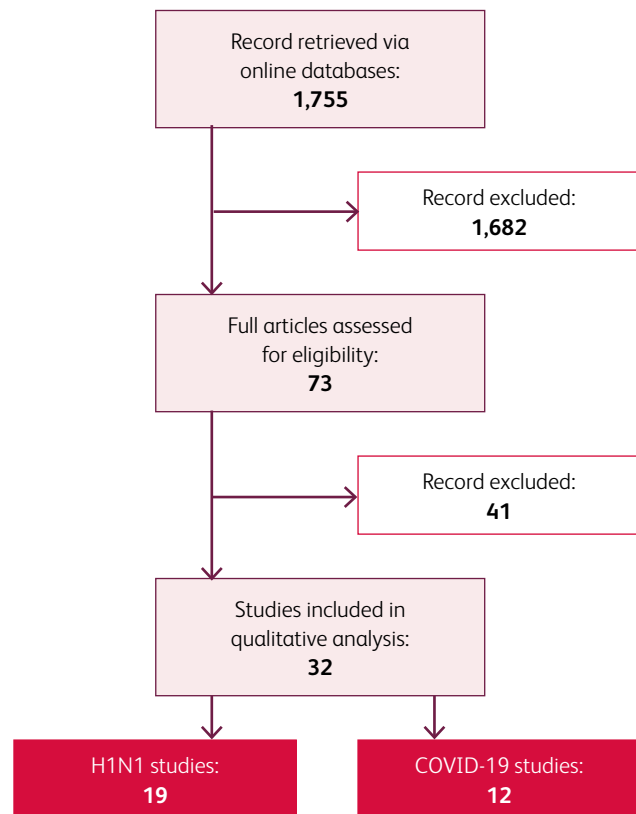


Fig 1. Records retrieved for H1N1 and COVID-19.

the H1N1 pandemic and 12 to the COVID-19 pandemic (Fig 1). The designs and demographics of the included studies are given in supplementary material S1. Qualitative analysis for health disparities resulted in 43 different factors, which were subdivided into nine overarching themes (Table 1).

'Knowledge, attitudes and behaviours' was the most cited theme, with a total of 17 papers, 10 for H1N1 and 7 for COVID-19. Six factors were included within this theme, and the most cited factor was 'attitudes towards vaccination'; all eight papers citing this factor were related solely to H1N1. 'Social distancing' was cited more for COVID-19 (three papers) than for H1N1 (one paper). Other factors that were briefly touched upon include 'motivation for keeping healthy', 'perception of personal risk of illness' and 'poor hand hygiene'. There were also three papers that failed to specify the exact factor creating health disparities within this theme.

'Access to healthcare' was the second most cited theme with a total of 16 papers, seven for H1N1 and nine for COVID-19. There were five factors included within this theme, and the most cited factor was also named 'access to healthcare'; it was found in nine papers, two for H1N1 and seven for COVID-19. 'Insurance status' was also found to be a major factor leading to disparities among Blacks/AAs during the pandemics; four papers for H1N1 and six for COVID-19 discussed this factor in the context that Blacks/AAs generally do not have insurance or are publicly insured. 'Healthcare provider recommendation of vaccines' was another factor that was cited in papers pertaining to H1N1 only. 'Frequency of doctor visits' and 'experience of healthcare providers with COVID-19' were other factors included within this theme.

'Sociopolitical factors' was the third most cited theme, with a total of 13 papers and eight factors. 'Lack of trust in government' was the most important factor, and consisted of six papers for H1N1 and

Table 1. Themes and factors for H1N1 and COVID-19

Themes and factors	H1N1	COVID-19	Total
Knowledge, attitudes and behaviors	10	7	17
Patient attitudes towards vaccines	8 ^{12-14,16,17,25,35,36}	0	8
Social distancing practices	1 ³⁷	3 ²⁰⁻²²	4
Motivation for keeping healthy	2 ^{13,17}	0	2
Poor hand hygiene	0	1 ²⁹	1
Perception of personal risk of illness	1 ³⁹	0	1
Unidentified behaviors and attitudes	0	3 ^{18,19,23}	3
Access to healthcare	7	9	16
Insurance	4 ^{14,24,25,28}	6 ^{20,22,23,27,29,41}	10
Access to healthcare	2 ^{37,39}	7 ^{21,22,27,29,30,40,41}	9
HCP recommendations of vaccines	3 ^{14,16,28}	0	3
Frequency of HCP visits	3 ^{14,25,28}	0	3
Experience managing illness	0	1 ⁴¹	1
Sociopolitical	8	4	12
Trust in government	6 ^{12,15-17,26,28}	1 ¹⁸	7
Structural insecurity / history of inequality	0	2 ^{22,29}	2
Social media	1 ¹⁵	0	1
Faith-based leaders	1 ¹⁵	0	1
Healthcare-related	3	2	5
History of medical mistreatment	2 ^{16,25}	0	2
Biases from medical providers	0	2 ^{27,29}	2
Trust in healthcare	1 ³³	0	1
Health status	5	7	12
Comorbidities	5 ^{14,17,24,25,39}	5 ^{20-22,30,42}	10
Disability	0	1 ⁴¹	1
Advanced illness at the time of illness	0	1 ²⁷	1
Neighborhood and housing	2	9	11
Population density	0	5 ^{21,22,29,30,41}	5
Multigenerational/multifamily households	0	3 ^{20,21,40}	3
Residential segregation	0	3 ^{19,30,41}	3
Racial segregation	0	3 ^{20,29,42}	3
Ethnic segregation	0	2 ^{30,42}	2
Living conditions	1 ³⁷	1 ²⁹	2
Environmental pollution	0	2 ^{20,29}	2
Incarceration	0	2 ^{21,22}	2
Housing type	1 ²⁸	0	1

Table 1. Themes and factors for H1N1 and COVID-19 (cont)

Themes and factors	H1N1	COVID-19	Total
Demographics	6	5	11
Age	4 ^{14,24,28,38}	2 ^{20,30}	6
Education	2 ^{31,38}	3 ^{29,41,42}	5
Gender	2 ^{17,38}	0	2
Financial stability	2	8	10
Income	2 ^{24,38}	4 ^{23,29,41,42}	6
Poverty	0	6 ^{18,22,29,30,41,42}	6
Employment	0	4 ^{20,22,29,42}	4
Female-headed households	0	1 ⁴²	1
Exposure at work	4	6	10
Essential workers	2 ^{31,34}	5 ^{20,21,30,40,41}	7
High-risk contacts/family	2 ^{24,28}	0	2
Workplace segregation	0	1 ²⁹	1
Genetics	3	0	3
Susceptibility	2 ^{13,36}	0	2
Antibody response	1 ³²	0	1

HCP = healthcare provider.

one for COVID-19. Other factors included 'influence of faith-based leaders' and 'social media' for H1N1, and 'structural insecurity', 'political orientation' and 'history of inequality' for COVID-19. A sub-theme titled 'healthcare related' was included within this theme, and incorporated the sociopolitical factors directly related to the healthcare system. It consisted of five papers across H1N1 and COVID-19.

'Health status' was the fourth most cited theme, with a total of 12 papers. 'Comorbidity with other diseases' was the most significant factor, with five papers for H1N1 and five for COVID-19. Other factors included 'disability' and 'advanced illness at the time of infection', which pertained to COVID-19 only.

Neighbourhood and housing was the fifth most cited theme, with a total of 11 papers, two for H1N1 and nine for COVID-19. There were nine factors included within this theme, all suggesting that Black/AA-dominated communities are more likely to live in underprivileged conditions. 'Multigenerational households' was a significant risk factor for both H1N1 and COVID-19. 'Types of housing' was cited for H1N1 only, while 'densely populated neighbourhoods', 'environmental pollution', 'incarceration' and 'residential segregation', both racial and ethnic, were cited for COVID-19 only.

Discussion

Patient knowledge and attitudes and the adoption of preventive behaviours was one of the major themes contributing to the disparities found between races when looking at both pandemics. Attitudes towards vaccination during the H1N1 pandemic could be directly predicted, as people with a history of annual vaccination demonstrated a 3.37 times higher likelihood of getting the new

vaccine.¹³ On the other hand, people with concerns about vaccines in general showed much less acceptance towards the H1N1 vaccine. Within undecided groups, Blacks and Hispanics with lower education and lower socioeconomic levels tended to lean more towards refusal of H1N1 vaccination.¹³ Apart from historical fears of being experimented on, an often-cited concern from some Black communities, most concern related to the safety and side effect profile of the vaccine itself.^{14,15} It was suggested that the acceptance levels could be increased given adequate education and communication from caregivers.¹⁶ Furthermore, during the H1N1 pandemic, racial minority groups including AAs were more likely to adopt preventive behaviours than Whites. They were more likely to refrain from touching their eyes, nose or mouth, cover their coughs or sneezes with a tissue, use sanitiser often, disinfect their homes and workspaces, and avoid air travel or other means of public transportation.¹⁷ These findings were obtained after socioeconomic, demographic, healthcare and attitude-related variables were controlled for to ensure accuracy of results. In addition, AAs were shown to maintain a positive concern for health and hygiene during the H1N1 pandemic, and Black patients out of all the ethnicities were the most concerned about catching the illness or concerned about a family member falling sick.¹⁷ These findings directly highlighted that the health discrepancies seen were not intrinsic to Black patients on account of their knowledge, attitudes and behaviours, but rather due to other external influencing factors. Interestingly, when looking at COVID-19, they were the racial group least worried about being infected by the virus. Many of them did not follow proper hand hygiene, could not identify symptoms efficiently, and did not feel prepared to accept and face the outbreak. Their perception of personal risk

and ability to prevent infection was limited. It was suggested that this may have been partly due to feeling that they are unable to change their circumstances, and partly due to the lack of explicit communication from public health.^{18,19} It may also have been due to the fact that the pandemic was still in the early stages at this point in time. Disproportionately Black counties also reported lower social distancing scores.²⁰ However, many Black Americans did not have a choice in this regard due to their residential settings, transportation options and field of work. Many of them were found to live in densely populated areas and households, use public transportation and work in frontline essential services, and were overrepresented in detention centres, jails, and prisons. Thus, social distancing or self-quarantining could not be carried out effectively.²¹ To protect these vulnerable counties financial aid, expanded healthcare, effective distribution of COVID-19 related information, and measures to improve social distancing have been suggested.^{22,23}

Access to healthcare was another important theme found in the literature for both pandemics, and it encompasses access to vaccinations, primary care physician (PCP) visits, access to insurance, and the scope of insurance coverage. Wang *et al* observed that while the government increased immunisation access through legislative changes, access to these sites were still limited to the underprivileged population due insufficient subsidisation and availability of the vaccine from non-traditional access points.⁴³ Vaccination rates during the H1N1 pandemic were also found to be affected by the frequency of PCP visits by patients. More visits were linked to more recommendations for vaccination by PCPs, which was beneficial in increasing vaccination rates.¹⁴ Lower uptakes in vaccination among Black and Hispanic patients coincided with a significantly higher number of 'missed opportunities' for vaccine recommendations in comparison to non-Hispanic White patients.²⁴ This information may be applied to the current COVID-19 pandemic: medical caregivers should be made aware of how important their role is recommending vaccination. Furthermore, health insurance was an important factor affecting access to healthcare during both pandemics. During the H1N1 pandemic, those insured were more likely to receive recommendations from their PCPs to get vaccinated, and to actually be vaccinated.^{24,26} As a result, White patients had higher vaccination rates than Black patients.²⁵ A lack of insurance proved to be a barrier for vaccination uptake in high-risk patients.²⁵ The nature of insurance coverage also played a major role in limiting these demographic groups access to health care. Fewer Black and Hispanic patients had insurance compared to White patients; if they did have insurance, their limited coverage restricted their access to further care and receiving vaccination. These barriers may have been eliminated if vaccination had been offered in a universal manner irrespective of the nature of insurance coverage or lack thereof. Currently, many counties with a disproportionately higher Black population have witnessed an increased number of COVID-19 cases and higher mortality rates due to a lack of health insurance. These counties have increased rates of unemployment, which is directly related to health insurance status. The Federal government establishes certain parameters that individual states must follow; however, each state may administer various programs at their own discretion.⁴⁴ Since the 2009 H1N1 pandemic, there have been many efforts to implement expansions to Medicaid eligibility and coverage such as the Affordable Care Act. This will allow low-income households that were not initially eligible for Medicaid to establish their own mandates for the purchase of health insurance, and specifically to choose among a variety of plans offering different levels of coverage. However, within some

of these regions, many ethnic minorities do not have Medicaid or Medicare, nor has the Affordable Care Act been implemented effectively yet. Many Black Americans living in these areas work in the service industry, have lower insurance coverages and are unable to work from home. Consequently, they have a higher risk of exposure. In addition, they are less likely to enjoy certain benefits that will allow them time off from work to be tested and treated for COVID-19. The pandemic has also led to increased unemployment rates, exacerbating the limited insurance coverage.²⁰ As a result, people with public insurance or those who lack insurance are less likely to be admitted to hospitals in case of severe symptoms.²⁷

Sociopolitical factors specific to Blacks/AAs proved to be an important theme in health disparities for both pandemics. Multiple studies noted that a lack of trust in government was a major cause for reduced vaccination rates among Black/AA patients during the H1N1 pandemic, who were often less vaccinated than White patients.^{15-17,28} The infamous Tuskegee Experiment in 1932 was frequently cited by AA respondents as their reasoning for vaccination refusal, highlighting suspicions in the Black community from a broader history of medical mistreatment.^{15,16} This implies that vaccination campaigns for COVID-19 vaccines under development will similarly be met with roadblocks of suspicion and mistrust from the Black/AA community. Therefore, factual, trustworthy mediums that appeal specifically to this community will need to be formed. Social media platforms, chain emails and certain celebrities maintained a strong stance against H1N1 vaccination and hinted at government conspiracies.¹⁶ There was even a viral text message circulating within communities stating that H1N1 stood for 'Hispanic 1 Negro 1', insinuating that the government was aiming to eliminate these ethnicities.¹⁵ Likewise, churches, which are known to be a very influential source of advice and health information for AA communities, also propagated the same ideas.^{15,16} Apart from vaccination, Quinn *et al*'s study showed that Black patients who trusted the government and FDA had a greater uptake of new medications like peramivir, whereas Black patients with less confidence in the government would not even believe the drug information pamphlets.²⁶ Interestingly, one of the studies analysing the H1N1 pandemic showed that even higher levels of education did not overcome these suspicious attitudes that have been deeply ingrained historically.¹⁶ However, this did not indicate a lack of interest in self-care among AA patients, who were in fact motivated to keep healthy during the H1N1 pandemic. Their rates of handwashing, sanitising, disinfecting and increased vitamin intake far outstripped White patients.¹⁷ Furthermore, a personal history of medical mistreatment with discrimination in healthcare facilities was also a factor for decreased vaccination rates among Black patients. A lower vaccine uptake was seen in a study where participants mentioned experiencing medical mistreatment in person, and negative attitudes towards vaccination were directly related to prior mistreatment from patients' own PCPs.^{16,25} During COVID-19, mistrust towards the government was found to manifest as disappointment in how the pandemic was being handled. The majority of citizens, regardless of race, had little or no confidence that the federal government could prevent a nationwide outbreak, with Black respondents having slightly less confidence.¹⁸ Black/AA patients also reported facing biased treatment from medical providers during COVID-19. These negative experiences resulted in these patients seeking care only for extreme cases. Thus, comparatively fewer Black/AA patients were screened and treated for COVID-19 early on, resulting in higher infection rates, greater severity of illness and higher mortality.^{27,29} It is clear that, whether

10 years ago with H1N1 or currently with COVID-19, sociopolitical factors have impacted healthcare negatively in producing disparities. This calls for a change in healthcare dynamics to remove any form of possible discrimination on a minute level to patients, and also to utilise both media and faith-based communities in regaining the lost trust with the Black/AA communities, repairing historical damage, and hopefully achieving better healthcare outcomes in the USA.

Residential segregation was linked with racial health disparities when analysing literature on COVID-19 across the USA. Incidence and mortality rates for COVID-19 were higher among Blacks/AAs.¹⁹ 97% of disproportionately Black counties reported positive cases and 49% reported at least one death, versus 81% and 28% respectively for all other counties. Firstly, these disproportionately Black counties are associated with increased environmental pollution. Since respiratory viruses like COVID-19 compromise the airway, previous exposure to pollution led to a poorer prognosis. For example, a Black neighbourhood in New Orleans with long-term exposure to chemical plants and refineries had one of the highest COVID-19 mortality rates across the USA in April 2020. Secondly, these counties have a higher population density. For instance, Black neighbourhoods in Milwaukee, New Orleans, Houston, Brooklyn, Detroit and South Chicago are densely populated with apartment buildings where viral transmission was enhanced.²⁹ A study titled 'The impact of COVID-19 on African American communities in the United States' showed that COVID-19 prevalence increased by 5% and death rate increased by 2/100,000 people for every percentage increase in county African American density.³⁰ Thirdly, Blacks/AAs often live in larger households; multigenerational and multifamily households are common in these communities, thus reducing social distancing scores. Disproportionately Black counties have more than one person living per room and these counties correlated with increased COVID-19 cases.²⁰ Blacks/AAs are also overrepresented in adult living facilities such as nursing homes, homeless shelters, detention centres, jails and prisons, where social distancing is limited.²¹ The density, proximity, and bed capacity in these residential environments increased COVID-19 transmission. In conclusion, Blacks/AAs are more vulnerable towards COVID-19 due to living in polluted environments, dense neighbourhoods, and poor-quality housing.

Limitations

Only studies published in English with free-full text availability were utilised. In addition, the included studies did not analyse all of the states and counties across the USA equally. The search period was also limited from 15 June to 27 June 2020, which was still an early point in time for the COVID-19 pandemic. Since then, there has been an increase in the volume of information regarding the pandemic unlike the voluminous information available for H1N1 that occurred a decade ago. The COVID-19 pandemic is still ongoing with statistics changing on the daily; therefore, new data may not be well represented in our article.

Future recommendations and conclusions

The 2009 H1N1 pandemic and the current COVID-19 pandemic have brought to light healthcare disparities that exist within the American healthcare system. The similarities between the two pandemics indicate that there are a variety of neglected issues in healthcare that need to be addressed. During the time between

these two pandemics, efforts on a national level were attempted to mitigate disparities in insurance coverage by means of the Affordable Care Act. However, its implementation varied from state to state, which hindered a positive outcome. With respect to residential segregation, increased funding and resources should be allotted for improving medical care in existing communities. Along with this, the incorporation of equal healthcare opportunities and diversity should be implemented in developing communities.

Based on our review, the following suggestions can be made for any future outbreaks and for the American healthcare system at large:

- > Better educate patients and decrease misinformation to improve knowledge, attitudes, and behaviours of the population at large.
- > Implement new policies that allow access to treatment for those who lack insurance, have inadequate insurance coverage or live in neighbourhoods with a higher spread of disease.
- > Provide culture-sensitive education for healthcare providers to ensure non-discriminatory patient interactions, which may result in better rapport and trust.

In doing so, health disparities may be adequately addressed, and all Americans may be able to receive a higher standard of care and treatment. ■

Supplementary material

Additional supplementary material may be found in the online version of this article at www.rcpjournals.org/clinmedicine:
S1 – Designs and demographics of included studies.

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**Address for correspondence: Prathayini Paramanathan, 93 Skyway Avenue, Suite 201, Toronto, Ontario, M9W 6N5 Canada
Email: prathayini.paramanathan@mail.utoronto.ca**