

Perspective

Fear-Responses to Bat-Originating Coronavirus Pandemics with Respect to Quarantines Gauged in Relation to Postmodern Thought—Implications and Recommendations

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Abstract: Fear-responses to bat-originating coronavirus pandemics with respect to quarantine imposition are gathered and interpreted from large datasets, identified and disseminated by media. Responses are effectively gauged using postmodern thought with a continuum ranging from people's resilience to define their own perspectives to public views being socially conditioned from media persistence in maintaining fear. Public responses to the 2003 SARS pandemic generally presumed and supported resilience of citizens' perspectives. In contrast, from late 2019 to mid-2022, public responses to the COVID-19 pandemic were media-determined, promoting fear. In this regard, reactions to the COVID-19 quarantines are contrasted to the hospital isolations of SARS. The primary source of the difference was the major polarizing influence by social media of the WHO policy makers' pronouncements and of healthcare providers' statements directing media spotlight in their guidance of public response to COVID-19 throughout the pandemic, unlike during SARS. An investigation of cognitive bias regarding the psychological and societal implications related to this migration from resilience to fear regarding public responses to novel bat-originating coronavirus pandemics elicits recommendations concerning future quarantine dictates. These recommendations are dependent on appropriate encouragement of hopeful resilience through evidence based practice with respect to one extreme of the postmodern thought continuum.

Keywords: fear-responses; quarantine; postmodern thought; resilience; SARS; COVID-19; the World Health Organization; healthcare providers; cognitive bias; evidence based practice



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1. Introduction

Animal coronaviruses have diverse origins with the greatest variety arising from bats [1]. Rarely, bat coronaviruses infect humans [2]. Only three novel bat-originating coronaviruses have been identified as infecting humans: SARS-CoV (SARS), MERS-CoV (MERS), and SARS CoV-2 (COVID-19) [3,4]. The extent of international concern by the World Health Organization (WHO) regarding MERS never went beyond alerting all member-states to the new virus, tracking new cases and cautioning states not to introduce trade or travel restrictions [5]. This discussion of fear-responses to media use of large datasets related to bat-originating coronaviruses is in regard to those bat-originating coronaviruses that instead have been considered pandemics, i.e., SARS and COVID-19 [6].

Public responses differed substantially between SARS in 2003 and COVID-19 from 2019–2022 [7]. The difference was largely a result of changes over this period regarding media identification and dissemination of population views [8,9] gathered and interpreted from large datasets [10] in relation to direction from the WHO [11] and statements by concerned healthcare providers, often circulated out of context [12]. How these responses differed can be assessed from the perspective of post-modern thought [13] by recognizing a continuum [14] of fear levels towards coronavirus pandemics [15].

Quarantine is defined as the separation and restriction of movement of people with potential exposure to a contagious disease to reduce the risk of them infecting others [16].

Isolation, in contrast, is the separation of people diagnosed with a contagious disease from people who are not sick with the two terms often used interchangeably—especially in communication with the public [16]. Unlike COVID-19, the quarantine referred to in relation to SARS was for the most part isolation [17]. Historically, quarantine has involved separation from loved ones, loss of freedom, uncertainty over disease status, boredom [16], loss of income and future instability [18] of those who are not sick. Past quarantines have been found to lead to dramatic, negative effects, including reported suicides, substantially exacerbated anger, and lawsuits to those responsible for the imposition of quarantine [16]. As such, the potential benefits of mandatory quarantine should be carefully weighed against possible psychological and societal costs. For quarantine to be considered successful as a public health measure for use with bat-originating coronavirus pandemics, the negative effects associated with it must be reduced as much as possible.

With respect to the quarantines initiated to recent bat-originating coronavirus pandemics, public responses ranged from individuals demonstrating resilience, by assuming a personal perspective incompatible with apprehension [19], to their views being externally managed by media in relation to statements by recognized health experts, inciting and reinforcing fear [20]. Fear is defined as a state of apprehension caused by a perceived threat that disappears quickly once the threat is removed [21]. With SARS, although significant levels of fear were reported by people isolated by the virus [22], members of the general public who were not under quarantine and were able to develop resilience [23]—defined as flexible adaptability in the face of challenge [24]. Demonstrating such resilience has been found to diminish apprehension [25]. On the other hand, with COVID-19, public views on the virus were conditioned and dominated by fear created by the media through reformulating and dispensing information provided by the WHO and voiced by uneasy health care providers [26] in relation to quarantines [27]. The public fear-responses to these two coronavirus pandemics thus represented either end of this continuum, in relation to postmodern thought [28].

The perspective to be presented here concerns recommendations regarding the implications of this evolution in the fear-responses of the public to quarantine impositions regarding bat-originating coronavirus pandemics, with an investigation MERS remaining outside the focus of this work as it has not been considered a pandemic [5]. To begin this study, fear-responses in humans will be examined. Then, a comparison of the SARS virus to that of COVID-19 will be undertaken after initially differentiating human coronaviruses from these two bat-originating coronaviruses. Following this background information, the interpretation of postmodern thought regarding media handling of large datasets is investigated, as postmodern thought is that form of reasoning concerned with and most suitable to inspecting the manipulation of large datasets by media [29]. This will be accomplished by defining the role of media in a continuum with respect to responses to quarantines of bat-originating coronavirus pandemics between resilience to hold a personally derived perspective—found in response to SARS—and having one's view be conditioned as a result of media-promoted fear, as in the public assessment of COVID-19. Based on these investigations, the psychological and societal implications with respect to cognitive bias [30] will be considered. From these considerations, recommendations will be offered in relation to responses to future planned quarantines associated with bat-originating coronavirus pandemics. It will be argued that a major reason for this difference in fear-responses between SARS and COVID-19 was because of: (1) disparities between access to and amounts and types of media produced during each pandemic, (2) policy makers seemingly relying on the media interpretation of public health officials to guide the response to COVID-19 in a way they did not with SARS, and (3) the extent that worried health care providers were regularly encouraged by the media to transfer their own fear of these coronaviruses to the public during COVID-19 by imposing general quarantines but not during SARS.

The impetus for this research is the current diminishing of the COVID-19 pandemic, representing a time to assess and compare the result of SARS with that of COVID-19. Furthermore, it is this author's judgment that a useful way to make this assessment and

comparison is through postmodern thought in understanding the effect of fear-responses on creating cognitive bias, especially in relation to the use of large data sets that have become available and ubiquitous with respect to social media. As a narrative researcher concerned with encouraging hopeful resilience in lessening the depression and anxiety caused by burnout, this author has taken the initiative to point to ways to encourage and support this type of resilience when people are faced with the fear-responses that arise from bat-originating coronavirus pandemics. Furthermore, as a researcher living in Toronto during both the SARS and COVID-19 pandemics, this author personally noted the extreme difference in fear responses in comparing these pandemics, resulting in a curiosity to investigate further. Sources that will be references here will relate to the thesis that fear-responses to bat-originating coronaviruses are not obvious and depend on how these responses are activated in the brain regarding whether or not individuals consider they have the ability to control their fear-responses based on what they personally value.

2. Fear-Responses in Humans

To understand fear-responses in humans, it is important to identify the effect of these responses in the brain. Fear-responses in humans are modulated in three main areas of the brain—the amygdala, the prefrontal cortex, and the hippocampus [31,32]. When humans are presented with a threat, fear is activated and maintained in the amygdala, producing a fright, flight or fight reaction [33]. This does not subside until the threat is removed [34] or the prefrontal cortex is activated [35]. Thus, the prefrontal cortex inhibits activity in the amygdala [33]. Yet, it is insufficient to modulate fear-responses as prefrontal cortex activation can develop into either rumination (related to thinking about the past and one's distress [36]) or worry (regarding potential negative outcomes in the future [37]) producing anxiety [38]—a future-oriented fear-response [33]. For prefrontal cortex use to be beneficial in reducing fear, the memory of the threat must be narrativized by the individual based on what they personally value with respect to the threat they have encountered, producing a hopeful resilience [39]. The memory—then relocated from the amygdala to the hippocampus [40]—is thus stored as safe, even under threat [41], maintaining the fundamental values of the individual in creating a resilience [42] that is hopeful. With hopeful resilience, an individual is able to carry on promoting and enacting what they personally value even if presented with an ongoing threat to their person [43].

If humans are presented with continuous threats to the extent that they are unable to think, their memory of the threat remains associated with the amygdala [44], meaning their response will be limited to fright, flight or fight. In this way, the amygdala plays a central role in determining what demands pursuing, while the prefrontal cortex simulates and evaluates possible action plans to realize goals in relation to these pursuits [45]. One exception is antisocial individuals. If they are of the primary type (callous to others with low anxiety and low emotional reactivity), threats do not activate the amygdala, resulting in persistent defiant behaviour, aggression, and disregard for the emotions of others [46]. In those of the secondary type (high anxiety and emotional hyper-reactivity resulting from childhood abuse) there is a heightened response in the amygdala, greater than what is normally expected [46] with extreme emotional reactions demonstrated to perceived threats.

Apart from antisocial personalities, the prefrontal cortex is activated in people using reason in relation to the threat as a result of being provided with information, inhibiting the activity of the amygdala [31]. Still, if there is no end to the information the reasoning develops into anxiety, leaving them unable to determine what to do with respect to the continuing threat [47]. If encouraged to develop their own point of view regarding the threat based on what they personally value, reasoning can create a safe personal narrative activating memory in the hippocampus, moving it from the amygdala, and permitting confidence in knowing what to do under threat as a result of hopeful resilience [39].

3. Comparing Human Coronaviruses with SARS and COVID-19

In looking to make recommendations regarding fear-responses with respect to the imposition of quarantines in relation to bat-originating coronavirus pandemics, it is useful to compare these animal coronaviruses to human coronaviruses. Although similar in their symptomatic effect on people, human and animal coronaviruses differ genetically [48]. The SARS pandemic was the first where the transfer of an animal coronavirus to humans assumed detection, representing an entirely new type of beta coronavirus [48,49] originating in bats [50]—considered the potential reservoir for many such viruses [1]. Following SARS, COVID-19 became the second bat-originating transfer of animal coronavirus to humans to produce a pandemic, with 80% genome shared between the two coronaviruses [51].

3.1. Human Coronaviruses

Human coronaviruses [52] were first designated in 1965 [53]. They are responsible for a substantial proportion of upper respiratory tract infections in children and are associated with both upper and lower respiratory tract disease in adults [54]. They have been found to lead to pneumonia or cause aggravation of chronic obstructive pulmonary disease or chronic heart failure, particularly in older adults or the immunocompromised [55]. As with many other respiratory viruses, reinfection is common [56], as is their frequent mutation [55]. Due to their ubiquitous nature and anticipated mild outcomes, until the detection of SARS in 2002, little research attention was paid to coronaviruses [57]. Furthermore, although mortality was known to be related to infection by human coronaviruses, insufficient research was done to establish rates of death associated with them [58]. After SARS, there was an increased, though still limited, interest in mortality regarding human coronaviruses when it was found that outbreaks of the common cold in nursing homes amount to 5–6% of residents' deaths, indicating that they may be an underrecognized cause of respiratory outbreaks capable of resulting in pneumonia and death [59].

Given that human coronaviruses have been considered insignificant historically—generating little fear-response—it is important to compare the statistics that have been amassed regarding mortality in relation to them in long-term care facilities in comparison with COVID-19. For COVID-19, 50% of the initial deaths were those in nursing care facilities [60]. Yet, included as dying from COVID-19 in early 2021 were all those who tested positive for COVID-19, not only those who had actually succumbed because of the virus [60]. Unlike with human coronaviruses, where only recently has the effect of a cold been identified as a reason for death in long-term care facilities [59], any resident testing positive for COVID-19 was counted as dying from COVID-19. If all those are including who tested positive for COVID-19 in a nursing care facility, 41% of these residents died [60]. Although this percentage is significantly more than those who die of colds in nursing homes, it remains unknown what percentage of those who were cited as dying from COVID-19 did so as a result of comorbid conditions rather than COVID-19 itself [60].

Regarding these results with respect to long-term facilities, it is important to take into consideration the percentage of elderly who use these services. There is little research on the number of elderly in nursing homes internationally. However, in 2011, the country with the highest number of elderly in nursing homes was found to be Sweden, with 7.9%, the lowest was Korea with 0.2%, indicating that at this time only a small percentage of elderly lived in this type of institutional care [61]. This is important to note because, of those who are not in such care, there is no information on the percentage of elderly who have demised as a result of COVID-19 [61]. Furthermore, for any information gathered on COVID-19 mortality it must be recognized that the reporting of deaths from COVID-19 is overestimated in countries where testing is frequent (primarily industrialized countries) while in those countries where testing is infrequent (such as African countries), the reporting of deaths is underestimated [62]. Regarding elderly who are not in institutionalized care, reports of death by COVID-19 are thus unknown—similar in this regard to reports of mortality with respect to human coronaviruses.

3.2. SARS

The SARS pandemic began in the Foshan municipality, Guangdong Province, China, mid-November 2002 [63] and was identified as a novel coronavirus the end of February 2003 [64]. From November 2002 to the end of July 2003, 8445 people in 29 countries were infected by SARS, resulting 916 deaths [65]. SARS was highly infectious with significant morbidity [66]. Of the fatalities, 80% occurred in mainland China and Hong Kong, the rest primarily in Taiwan, Singapore, and Canada [67]. A global alert was issued for SARS by the WHO 12 March 2003 [68] with SARS becoming the first pandemic of the 21st century [69]. SARS was successfully contained in less than 4 months [70], largely because of an unprecedented level of international collaboration and cooperation [68] in maintaining the virus within healthcare settings, i.e., isolation [71]. The SARS virus has not returned since and is not expected to reappear due to its limited reservoir and the precautions taken at the time of the pandemic [72].

This coronavirus was unusual among infectious diseases because of the high rates of infection among healthcare workers [68]. Consequently, SARS was seen by the public to be associated with hospital settings [73] and something that would not be contracted if healthcare settings were avoided [74]. The potential seriousness to the general population of SARS was recognized by the public only when health care professionals treating SARS patients themselves were known to succumb to the virus [74]. Ultimately, 20% of all persons infected with SARS were healthcare providers [75]. Public awareness regarding SARS increased only once popular celebrities were enlisted to espouse the benefits of wearing masks [76], as throughout this pandemic masks were only a requirement in hospital settings [77]. The decline in the pandemic was thought to be a result of hospital and community infection control measures introduced in early February, including strict patient isolation, use of protective equipment by healthcare workers, prohibition regarding hospital visitors, and guidelines followed on epidemiologic investigation [74].

In the 21st century, SARS was the first novel coronavirus [70], and the first severe and readily transmissible new infectious disease to spread rapidly along international air travel routes [73]. Yet, without a general quarantine, the public had little knowledge concerning the virus during the pandemic (Hong Kong was an exception [78]) as the Chinese government initially approached the SARS crisis by hiding information [79] from the press and, in comparison with the effect of other public health scourges, at the time even medical experts questioned the amount of media attention being given to SARS [80].

3.3. COVID-19

The response to the 2019–2022 COVID-19 ongoing pandemic has been unprecedented in world-wide exposure [81] and cooperation [82] initiating concentrated research and enacting strict general quarantine measures with the aim eradicating the virus [83]. Identified in Wuhan, China, 25 November 2019 [84], COVID-19 replicates in the upper respiratory tract, mainly during the period between the appearance of initial symptoms and the full development phase of the infection and reaches a high viral load contributing to a quick spread of the virus [85]. By 23 January 2020, the response of the Chinese government was a total lockdown of Wuhan [86], a city of eleven million people, for 76 days [87]. It was this draconian measure, unexpected by that city's population and by other countries—recorded and focused on by the media [88]—that initiated the world-wide fear of the virus that was to become typical [89].

On 30 January 2020, the WHO declared the COVID-19 outbreak a public health emergency of international concern (PHEIC), the WHO's highest level of alarm. After 41 days, on 11 March 2020, the WHO reclassified COVID-19 outbreak as a pandemic [90]. Immediately, health care providers, influenced by the WHO's news-worthy directives, began publicly calling for public health measures to eradicate COVID-19 in their respective countries, including the use of quarantine, inciting further public fear of the novel coronavirus [91].

Yet, unlike SARS—primarily focused on isolation rather than quarantine [92,93]—the COVID-19 novel coronavirus was not controlled within four months. Instead, it has been

ongoing for over two and a half years with to date more than 611 million cases reported and over 6.52 million deaths worldwide, with the week of 23 January 2022 representing the largest number of reported cases at over 23 million [94]. The SARS outbreak was completely contained by nonpharmaceutical interventions, but controlling the spread of COVID-19—as, differing from the strategy used in SARS, it was not contained in healthcare settings [93] because contact tracing mainly failed [95]—has been more difficult and seen to require immunity by vaccination [96]. Nevertheless, although the spread of COVID-19 was much greater than that of SARS, if calculated, the percentage of deaths in relation to infections for SARS, at 10.85%, was more than ten times as great as compared to COVID-19 at 1.07%.

Within a few weeks of identification of COVID-19, international agreement was reached regarding how the virus was best controlled. This was to be accomplished with a three-pronged approach: vaccinations, physical distancing, and the wearing of masks [97]. Although their development was begun immediately and was exceptionally rapid for a vaccine, vaccinations only became available in late 2020 [98]. Until that time, physical distancing to the extent of properly timed lockdowns [99], similar to the one enacted in Wuhan, were considered optimal for containing COVID-19 [100]. However, lockdowns were not accepted in the same way throughout populations as personality traits, risk perception, well-being levels, and emotional activations were found relevant to people's level of compliance and their reporting of it [101]. Once effective vaccinations were realized, deemed safe, and a good proportion of a country's population had been inoculated, the need for quarantine was greatly diminished [102] although it should be stressed that the mere presence of functional and authorized vaccines did not in itself ensure that people got vaccinated [103]. It is for this reason that scholars needed to consider the possible psychological barriers to vaccination as an additional fear-response to the COVID-19 pandemic [104]. When the proper wearing of masks was found to have a significant effect on reducing the transmission of COVID-19 [105] and became required world-wide in public locations [106,107] continuing until spring of 2022, masks were retained even after this time in long-term care facilities and retirement homes. As COVID-19 cases began to rise once again [108] it was found vaccinated individuals may be asymptomatic spreaders [109]. For this reason, the use of masks may again be required as new variants of COVID-19 emerge [110] as well as calls for quarantine because, unlike SARS, waves of new COVID-19 variants are expected [111].

4. Postmodern Thought, Large Datasets and Media

Postmodern thought is useful to employ in considering public responses to quarantines associated with bat-originating coronavirus pandemics. It investigates underlying ideologies of power that shape the ability of participants to respond to the world, analyzing what is valued regarding inequity, oppression, and authority within social systems and structures [112]. In this way, postmodern thought related to medicine is based on evidence based practice [113], defining illness both objectively, through biology, and culturally, regarding the values patients uphold [114]. Understanding these power structures within postmodern thought is dependent on the analysis of large datasets [115]. This is especially so as postmodern thought is concerned with the legitimation and experience that characterizes the media-dominated cultural system [116].

Social media has proven to provide the most accessible large datasets to research [117–119]. In this regard, media is considered the agency that presents this compiled culture to the public through contradictions and oppositions related to what is to be feared and what is deemed safe—creating the illusion of universal public opinion rather than communication of actual values—with an aim of staging and reproducing drama regarding deterrence [108]. In doing so, although claiming objectivity, the media is identified in postmodern thought as focusing on setting the parameters for judgment [120] of those who either question or value a point of view differing from the constructed universal public opinion, both identifying and labelling the transgressors [121].

As the study of the differences between lived experiences and interpretations of them regarding risk and responsibility [122], postmodern thought seeks to capture the various narratives that the public creates in response to media in its defining of the extremes of fear and safety regarding what is deemed newsworthy [123]. While the media can be considered to define the dichotomy of the perspectives garnered from large datasets, it is postmodern thought that sees them not as a dichotomy but as the extreme ends of a continuum that includes all potential positions on the matter in question as equally valid within a conversation [124]. In this way, postmodern thought offers a conceptual space for considering these large datasets as inclusive of more than perceived universal acceptance and the labelling of transgressors [123]. The reason is this conceptual space is essentially an observer-community which constructs interpretations of the world having no absolute or universal status [125]. The place of individual perspectives on this continuum is determined by the point of view assumed regarding the opinions offered, designed to identify the underlying overall attitude of persons toward the issue [126].

Responses to quarantine regarding bat-originating coronavirus pandemics with respect to postmodern thought are thus best evaluated beyond universalize claims to set the standard for identifying and judging transgressors. Rather, these responses can be placed on a continuum ranging from individuals' resilience in defining and following their personal values to individuals' views created and managed by the media through fear. Regarding their place on this continuum, the public reaction to SARS to a large degree represented one end of the spectrum and COVID-19 the other. How this public reaction will be identified will be with respect to the amount and type of media coverage given to the particular bat-originating coronavirus as well as the effect that this media coverage had on the behavior of media consumers and on healthcare providers as a result.

4.1. Response to SARS by Media, Media Consumers, and by Healthcare Providers

The number of articles focused on SARS over the 2003 year was greater than any other individual topic across 5 years, with the exception of smoking [127]; yet, for 2003 specifically, there were 36 articles devoted to smoking while SARS had significantly more that year, with 164 [127]. Although SARS was the most newsworthy topic of 2003, few of the necessary specifics were mentioned to focus the creation of fear [128]. Instead, SARS was vaguely identified by the media as "mysterious" (30 times) and "deadly" (17 times) [127]. Yet, instigating fear was not required for the public to consider itself well informed of SARS by the media that year. The findings of a poll of 1450 Canadians (one of the few countries where SARS posed a significant problem comparable to China [129]) reported 97% being aware of SARS by April 2003 [127]. It is notable that being aware of SARS did not automatically translate into fear in Canada [129]. Of the 97%, only 28% were worried that either they or someone close to them would contract the disease [127], meaning that 72% of those polled were not worried that either they or someone close to them would contract SARS. Specifically, the countries seriously affected by SARS reported higher figures for precautionary actions based on the information obtained from media, but not of worry about SARS by the public [67].

Typically, media information regarding SARS lacked the creation of fear [130]. In the UK, the reporting on SARS of five major national newspapers during spring 2003 found most of the stories were brief, either primarily human interest or focused on government and the WHO sources—the emphasis on the WHO was regarding scientific successes, directing media responses in the UK and US to combined attention on human interest and medical research and responses [131]. Even in Toronto, the North American epicenter for SARS [132], the health risks of contracting SARS were considered by the media to be less than those of travelling to China [128]. Yet, when studied in hindsight, the general consensus was media coverage of SARS was excessive, sometimes inaccurate, and sensationalist [133]. However, this is likely an overestimation if research of news coverage during the pandemic of five Italian newspapers can be considered an example in finding that the proportion of front-page news articles on SARS was in actuality only 9.6% [134].

During SARS, the news available on the virus was considered reliable by the public, in part because social media platforms and cell phone text messaging were only emerging as viable means of information transmission [135]. Regarding common social media used today, both podcasts and Facebook began in 2004 [136,137], Twitter in 2006 [138], Instagram in 2010 [139], WeChat in 2011 [140] and the Discord in 2015 [141]. Smartphones were not available until 2007 [142]. The role of the WHO during SARS was to provide specific guidance to healthcare providers on clinical management and protective measures to prevent the virus spread and to ask passengers to avoid travel to areas where there was an inability to link all cases to known chains of transmission [65,143]. No calls for quarantine were issued by the WHO for SARS [144]. Communications by the WHO were in relation to its bulletins, rather than social media, and were written for healthcare providers and policy makers. They were not specifically intended for the general public [65,143] through dissemination by the media.

With our current range of social media unavailable during the SARS pandemic to provide immediate information, it is likely it was a lack of awareness and preparedness that put SARS healthcare providers at risk [145]. On the other hand, this paucity of social media may have also given healthcare providers the time, inclination and wherewithal to base their reactions to SARS on facts and on clinical experience rather than fears [146]. As such, greater exposure to SARS by healthcare providers was negatively correlated to anxiety with respect to SARS [147]. In this regard, although there were calls by some prominent healthcare providers for lockdowns with SARS [146], healthcare providers directly involved with SARS patients were able to recognize that it was case identification and isolation in hospitals that controlled SARS rather than quarantine, as SARS was only found to have sustained transmission in hospitals that did not anticipate its presence [93].

As a result of their developed expertise, these same healthcare providers were able to use their clinical experience with SARS to construct precautionary principles in 2010 [148] for determining how to respond to a future, SARS-like virus. It was proposed these principles would then be applicable when the harm from a virus was identified as:

- widespread
- increasing
- otherwise unexplained
- serious
- not easy to treat or reverse
- greater than the economic, social and health costs
- a cause of known health, economic or social harms

It was considered only under these conditions that it is reasonable for healthcare providers to advise that quarantine measures should be weighed as the appropriate alternative in controlling the virus [148].

4.2. Response to COVID-19 by Media, Media Consumers, and by Healthcare Providers

From the time it was first recognized in Wuhan, China, reports concerning COVID-19 were overwhelmingly the focus of news between early 2020 and spring of 2022 with COVID-19 coverage accounted for approximately 25.3% of all front-page online news articles between January and October 2020 [81]. The range of coverage included various media: publications in scientific journals [149], daily newspapers [150], television [150,151] and radio reports [152] and talk shows [153], podcasts [154] as well as the personal information individuals posted to their own social media through Facebook [117], Twitter [118], Instagram [119], WeChat [140] and the Discord [155] (to name some of the most popular social media used during the pandemic), not to mention the individual texting people did related to COVID-19 using their smartphones [156]. It is largely as a result of social media that the ever-present public concern regarding COVID-19 has often verged on panic resulting from both fear of the virus itself and a concern that the information being received was “fake news” [91,153,157].

Through various media—especially social media—rumor became entangled with the truth during COVID-19 [158]. It has been formularized that circulation of rumors varies with the importance of the subject to the population multiplied by the ambiguity of the evidence pertaining to the topic of concern [135]. Furthermore, it has been observed that at times of crisis, non-state-controlled media thrive, while state-controlled media are seen to create an illusion of normalcy [79]. Yet, perhaps because of the unprecedented extent and ease of transmission and possibility of being infected with COVID-19, even government media migrated from a concern with maintaining order to the perceived need to reveal the barrage of information that was available daily through social media on COVID-19 [140]. This includes making use of the large datasets available from the most popular forms of social media, creating the fear that led to consumer buying panic [159] and stockpiling behavior [160]. This occurred most specifically with toilet paper, where a predisposition towards emotionality in specific consumers predicted the fearful behavior that promoted this stockpiling behavior [161] in response to anticipating quarantine [162].

Early on, the WHO promoted vaccines as the most effective alternative to COVID-19 and developed interim guidance on the best practices in undertaking post-introduction evaluations of COVID-19 vaccines [163]. This interest in promoting vaccines as the best response to the pandemic can be viewed as primed by two articles published in the *New England Journal of Medicine* before the pandemic, written by philanthropist Bill Gates [164,165], regarding what he saw as the future threat of pandemics and the need for vaccines. These articles were published in 2018, at the time when the Bill and Melinda Gates Foundation assumed the position of the second largest donor of the WHO at \$531 M, second only to the U.S.A. government at \$893 M—more than the U.K., Germany, Japan or the World Bank [166]. This focus of the WHO on vaccines as a preventative measure for COVID-19 has meant that, unlike during SARS, the organization's advice on medical treatment of COVID-19 has not been based on scientific studies regarding experienced-based information from physicians treating the largest number of patients successfully [167]. Quarantines were seen as necessary by the WHO because vaccines were not yet available, i.e., it was the future focus on COVID-19 vaccines that directed the institution of quarantines [168].

Given the direction of the WHO for universal vaccination against COVID-19 as the method for curtailing the virus, social media proliferated views regarding vaccination [169], in contrast to a focus on successful early outpatient treatment of COVID-19 [170,171]. Furthermore, social media has been increasingly used as a source of vaccination data and as a prime communication tool to increase vaccination [172]. As a result, a significant portion of treatment time healthcare providers are devoting to COVID-19 is with respect to a discussion of social media views of vaccines with fearful patients [173]. Dealing with misinformation is now a core role for primary healthcare providers, unnecessary during SARS [174]. This new role has placed an increased burden on healthcare providers exacerbated by an expanded workload, organizational changes, risk exposure and social stigma causing increased fear among these frontline workers [175]. Fear of COVID-19 by healthcare professionals has been found to affect their work performance [176] increasing fear-responses in the public, inciting public anger towards healthcare providers at the beginning of the pandemic [177] and continued into 2022 [178].

With respect to the WHO, it is relevant to consider whether the precautionary principles put forward for declaring pandemic quarantine necessary by healthcare professionals successful at treating SARS in 2003 were ones that were followed regarding COVID-19. To assess this, the use of the term “pandemic” by the WHO must first be examined. In the wake of an outbreak of the novel H1N1 virus in 2009, there was broad debate of the definition of “pandemic” [179]. There were two opposing sides. One claimed the WHO had changed the definition of the term to quickly declare a pandemic; the other argued that a definition was never formally defined [180]. Regarding the 2009 novel H1N1 influenza, pandemic was declared related to four aspects of the virus. It, (1) was newly emerging, (2) had no population immunity, (3) resulted in high morbidity and mortality, and (4) was easily spread [175]. What the principles were in declaring COVID-19 a pandemic were not

directly provided by the WHO [181], although the statement by the WHO, “we are deeply concerned both by the alarming levels of spread and severity, and by the alarming levels of inaction”, seemed to provide the justification [182] demonstrating that they were not the precautionary principles proposed in 2010 by those who had successfully responded to SARS [148]. The difficulty with the WHO’s declaration of a pandemic and enacting of a quarantine in comparison with the principles that were put forward after SARS is that the WHO simultaneously instituted a quarantine when it declared a pandemic [182]. In declaring a pandemic, the WHO was making a public health statement. However, in concurrently issuing an edict for quarantine, it used the naming of a pandemic to make a requirement that also had economic, social and additional health costs without evidently making this decision based on these costs, as had been recommended by the experts who were at the forefront in the quick resolution of the SARS pandemic [148].

5. Implications Related to Cognitive Bias

The implications of the migration from resilience to fear regarding postmodern thought’s continuum of public responses to quarantines related to bat-originating coronavirus pandemics can be considered from the perspective of cognitive bias. Occurring when human cognition reliably produces systematically distorted representations of some aspect of objective reality [183], cognitive bias is a feature of animals generally and is thought to be experienced when those in unpredictable or stressful conditions are inclined to respond more negatively to ambiguous situations than they would within predictable or familiar conditions [184]. In other words, when people recognize their situation as threatening, and thus inducing fear, they become primed to witness neutral events as threatening as well, doing so especially when they see themselves as belonging to groups experiencing discrimination [185].

Fear, with the addition of cognitive bias, begets increased fear. With respect to COVID-19, which was met by a fear response by the public rather than resilience, it is a predictor of future vaccine willingness to reduce fear [186]. Yet, in creating this willingness, the cognitive bias is also seen to increase mental health issues [187] and anger towards those assuming responsibility regarding COVID-19 information [188,189] as well as with respect to certain ethnic groups [190] at the same time promoting the primary type of antisocial behavior [46]. Increased mental health issues are seen also and especially in those with preexisting anxiety-related disorders—representing a display of the secondary type of antisocial behavior [47]—who have been found vulnerable to a steep inflation of fear during the COVID-19 pandemic [191]. In all, findings have suggested a general deterioration of mental health in people, representing a “psychological COVID-19 syndrome”, characterized by increases in anxiety, stress, and depression, as well as decreases in well-being and sleep quality [192]. This type of response has been further exacerbated when fear of COVID-19 by healthcare providers has delayed diagnosis and treatment of patients [193,194].

Cognitive bias in turning against healthcare providers by the public through social media has not only been identified as related to the mental health of the public, it has also produced mental health issues in healthcare providers themselves, leading in the extreme to suicides in some of these professionals who contracted COVID-19 [195]. For those healthcare providers who have not been as drastically affected by COVID-19, cognitive bias has promoted their likely ongoing need for both well-being programs and access to mental health services [189].

The implications of cognitive bias can thus be considered both from the point of view of individual psychology and of society in general. One interesting aspect related to cognitive bias is that imprinting of those directly affected by SARS increased individuals’ later fear of COVID-19 [196]; thus, this cognitive bias should be considered above and beyond the cognitive bias developed in relation to fear-responses to COVID-19 alone. As SARS was more likely to produce resilience in the general population in response to this bat-originating coronavirus pandemic (although there were those who were particularly affected by SARS who did display an immediate fear-response [197], especially Chinese

immigrants blamed for the disease [198]), it is the psychological and societal implications of COVID-19 regarding cognitive bias that will be investigated, as it is those particularly that were affected by social media to produce fear-responses.

5.1. Psychological Implications

With respect to the government directives during COVID-19 to socially distance, mask and receive vaccines resulting in quarantines it should be noted that such control measures of people have a negative long-term effect on mental health [199]. From the perspective of memory, individuals given negative feedback—suggesting that the coping strategies they have developed render them less capable than others of retrieving important information—significantly decrease their subsequent memory retrieval practices. In contrast, self-efficacy has been found to induce memory to improve [200]. Fear of COVID-19 has been correlated with anxiety, depression, and stress symptoms [201] as fear-responses are stored as negative memories [202]. Once individuals retain negative memories, even if they develop positive ones at a later date, retracted negative memories can continue to have hurtful functions in relation to their now thought to be genuine autobiographical memories [203].

In this regard, it has been found with university students that there is a positive relationship between social distancing and psychological resilience, that is, unless there is a presence of depression, anxiety and stress—in this case, there is a significant negative relationship between the practice of social distancing and resilience [204]. A further study showed university students experienced high levels of anxiety, depression symptoms, and low mental health status when transitioning to the coronavirus' new norms in April 2020 [205]. An additional study of university students in Ghana noted the prevalence of a high degree of COVID-19 risk perception among almost half (47.4%) of the sampled 882 students [206]. When depression is found to result from a fear-response to COVID-19 it has been revealed this most likely has been triggered by intolerance of uncertainty during the pandemic and can result in maladaptive coping strategies, such as emotional eating [207]. In this way, the creation of fear-responses in individuals with respect to COVID-19 can lead psychologically to future difficulties in memory, the inability to become resilient, and the adoption of dysfunctional coping strategies.

In considering the personality traits that may lead to psychological difficulties regarding fear-responses to bat-originating coronavirus pandemics, evaluation using the Big Five Personality Traits [208] found college students high in openness, extraversion, agreeableness, and conscientiousness tended to use active problem-focused coping while it was those students high in neuroticism who tended to use maladaptive emotion-focused coping [209]. Furthermore, results from logistic regression analyses have demonstrated neuroticism, coronaphobia, and hypochondriasis to be the fear factors that predicted pandemic-related psychopathology in adults in general [210].

Beyond demonstrated psychological traits, studies have indicated that COVID-19 causes long-term mental health sequelae in those who have recovered from the disease [211]. For those individuals who have recovered from COVID-19, an increased risk of developing suicidal behaviors may be noted, while post-COVID syndrome comprises another potential risk factor contributing to increased suicidal behaviors, although more likely in the long term [212]. An international survey of 6882 individuals in 59 countries revealed that, in addition to presenting a high risk to physical health, the COVID-19 pandemic has significantly affected global mental health, with respect to pandemic-related depression and anxiety symptoms [213]; therefore, creating significant psychological effects in individuals [214].

5.2. Societal Implications

Examining societal implications here involves considering how the fear-responses of various social groups to COVID-19 altered their relationship to social institutions. In this regard, those who trusted government were more likely to adhere to social control measures with respect to fear-responses to COVID-19 [215]. This type of trust has led to

vaccination compliance, especially if recommended by employers [216]. Not venturing outdoors predicted fear of COVID-19, although reduced income from an inability to work was not found to be associated with a fear of COVID-19 [217]. This implies that a population encouraged to remain at home by government is likely to be conditioned to increase their fear-response, to at least bat-originated coronavirus pandemics, yet, if their income is reduced in doing so, employers will not be held accountable by employees for increasing this fear-response, especially if employers have involved employees in the preparation of post pandemic business plans [218].

Regarding specific economic impacts of COVID-19 quarantines, in addition to increases in health expenditures and a reduced labor force, the pandemic has massively disrupted the supply and demand chain and caused difficulties for manufacturers, resulting in employee dismissal or delay to their economic activities to prevent additional loss [219]. In countries where the unemployment rate was high pre-pandemic, the economic effect of fear-responses to COVID-19 has been significant [220]. A summary of case reports suggests that COVID-19 job-related stress, economic recession, and political unrest increase the risk not only of suicidal behaviors [221] but also of acts of violence resulting in effects that are more socially disturbing than infection with the virus [222], including child maltreatment (especially by fathers) resulting from job-related stress [223], and stigmatization of those thought to be contagious once they return to work [218].

Regarding social methods intended by adults for coping, it has been found that fear-responses with respect to the following: using social media as source information, personal experience with COVID-19, child care challenges as a result of restriction, and lacking a religious community, were each related to increased likeliness for alcohol and/or substance use to the extent of one third of the adult population surveyed resorted to increased intake of alcohol or substances as a way to cope [224,225]. Nevertheless, this maladaptive method of coping was not correlated with increased resilience in those who did increase their consumption levels [226].

With respect to childcare, fear-responses to COVID-19 were the cause of a decrease in gender equality as women were found to have assumed the majority of childcare with the closure of daycare facilities and schools during quarantine, even though both parents might be working from home [227]. Women's expanded workload also included assuming additional housework as well as homeschooling [228], producing higher levels of psychological distress reported by mothers of elementary school-age and younger children as a group [229]. This distress was recognized and constantly reinforced by the media in representing parents, and especially mothers, as overwhelmed and inadequate to the demands on their families related to COVID-19, even if those parents were professional educators [230].

Families were detrimentally affected in various ways. Mothers of families with lower levels of income were at particular risk for deterioration in well-being [231]. This is especially so as their access to reliable media for their children's learning was insufficient, which is thought to have likely increased the social achievement gap [232]. Furthermore, the additional commotion in the household resulting from family members being forced together constantly during quarantine has been found to have had adverse effects on multiple family relationships [233]. Outside the household bubble [234] of quarantine, fear of infection left seniors peripheral to the family, putting them as a group at risk of loneliness (which has been found to increase cognitive bias fear-responses to COVID-19 [235]) causing depressive and sleep disturbance symptoms [236]. Furthermore, there was no advisable or acceptable way for families to relax through travel during the quarantine. This problem was exacerbated by families demonstrating a continuing "travel fear" to maintain their self-protection once restrictions were lifted [237] which, in turn, has decimated the travel industry [238].

Throughout quarantine and once children returned to school, fear-responses to COVID-19 had a significant effect on education at all levels from the perspectives of both students and teachers. Staying at home affected the ways that students learned, with an exponential

increase in online learning during the COVID-19 pandemic [239,240]. Although teachers have been found generally resilient as a group [241], with respect to COVID-19 they may have developed an even greater fear of the pandemic with cognitive bias than healthcare providers [242] especially female teachers [242] and student teachers [243]. As such, this fear-response from cognitive bias from teachers is one that is potentially being reinforced with students and has been found to lead to motivation in children to enact violence [244], a trait of primary type antisocial individuals who cannot be controlled by threats designed to induce fear [46]. For post-secondary students who demonstrate a fear-response, a feeling of belongingness has been found to mediate the association between coronavirus anxiety and psychological adjustment [245]. However, extraversion in post-secondary students [246] has been identified as positively influencing the conditions leading to the type of maladaptive behavior with respect to COVID-19, covariant with primary type antisocial individuals [47], regardless of nationality [247].

Further societal issues related to cognitive bias concern COVID-19 and healthcare. These include long line ups at emergency departments [248,249] resulting both from use of the emergency department when office visits to general practitioners are curtailed and the priming of the population to consider cold-like symptoms—which were generally ignored in the past—to be potentially fatal [250]. Early in the pandemic quarantine, COVID-19 was associated with about a 67% decline in the total number of outpatient visits per provider [251]. Moreover, the problem of accessing healthcare providers has been aggravated by a significant number of healthcare providers resigning as a result of mental distress caused by COVID-19 [252], including, in some cases, because of their own vaccine refusal [253]. Many more intend to leave their jobs [254]. For those patients in substance harm reduction programs, these have been threatened as a result of COVID-19-related fear, increasing this group's existing marginalization and stigmatization [255].

Beyond healthcare, an indirect result of COVID-19 fear-responses is that unemployment rates in South Asia in particular have consistently soared; therefore, ensuring a basic food supply for the needy and vulnerable groups is necessary to help them cope with mental health consequences [256]. Furthermore, there has been the decrease in emphasis on environmental concerns since the beginning of COVID-19 [257]. Fear of contracting COVID-19 has led to various unsafe practices in the disposal of used masks and tissues and the release of a significant amount of hazardous medical and solid wastes into the environment. These may contribute to the spread of COVID-19 and have a long-term effect on environment destruction [258].

To aid in understanding fear-responses to COVID-19, the Fear of COVID-19 Scale (FCV-19S) was developed to complement clinical efforts in preventing the spread and treating of COVID-19 cases [259]. It has been noted that the FCV-19S has been translated into a number of languages and used with various cultures as well as validated for uses in different vulnerable populations, including the elderly, children, adolescents and people with pre-existing physical and mental disease [260]. The recognized value of the FCV-19S implies that the scale will continue to be used to assess fear-responses with respect to cognitive bias as it continues to be tested for appropriateness for in additional populations [261,262]. This attention to the FCV-19S in particular will increase the research done on assessing fear-responses in response to quarantine of at least this particular bat-originating coronavirus.

6. Recommendations

In considering bat-originating coronavirus pandemics from the perspective of post-modern thought concerned with cognitive bias, the most important recommendation is that the principles that were developed by those who were successful in containing and treating the SARS virus [148] should be knowingly applied by the WHO, and reported by the media, before issuing the evaluation of a pandemic as simultaneously requiring quarantine. Secondly, with respect to healthcare providers, the focus should be evidence based practice [113] in dealing with the effects of the pandemic rather than continued response to fear-inducing social media.

The FCV-19S, as a seven-item scale that has been found to hold robust psychometric properties, is reliable and valid in assessing fear of COVID-19 among the general population and has been cited as useful in allaying COVID-19 fears among individuals [259]. It is recommended that for any subsequent novel bat-originating coronavirus pandemic research be conducted in adapting the FCV-19S in response, as it is likely that knowing where fear-responses fit on this scale is useful for individuals to consider their own reactions from a more reasoned point of view, optimally engaging their prefrontal cortex, rather than being limited to responded to the pandemic purely through activation of the amygdala or ruminating and/or worrying about possibilities.

Considering fear-responses in humans, people encouraged to develop their own point of view with respect to a threat in relation to what they personally value have increased psychologically protective responses as their reasoning creates a safe personal narrative that activates the memory of the hippocampus—moving the memory from the amygdala where the reaction to fear is limited to fright, flight and fight [33]—permitting the person to feel confident knowing what to do under threat [39]. When the memory of the threat is stored in this way in the hippocampus, a person's reaction to the types of stress that develop with quarantine can become one of hopeful resilience rather than a fear-response [263] in the continuum related to postmodern thought. This development of resilience based on what one personally values as recognized in the prefrontal cortex moves the response to bat-originating coronavirus pandemics from the amygdala, where antisocial tendencies are developed and sustained, to the “social brain” [264] of the hippocampus. This is because how the brain processes are conceptualized makes a significant difference in understanding the complexity of fear-responses to pandemics like COVID-19 [265]. In this regard, it is recommended that individuals be encouraged to develop their own narratives related to coronavirus pandemics based on what they personally value [39], rather than depending on news generated by media in interpreting large datasets, as it is important that the narrative they develop in relation to hippocampal memory be that of producing hopeful resilience rather than conditional resilience based on direction from the media [39].

Regarding healthcare professionals, as those who have been most affected by the COVID-19 pandemic, it has been found that working by personal choice in COVID units, work belongingness, resilience and problem-focused coping strategies appeared to be protective factors in dealing with stress and anxiety related to the coronavirus [25]. As such, processes designed to help promote work belongingness, resilience and problem focused coping strategies would be likely to be helpful to reducing stress and anxiety with respect to future coronaviruses without waiting for them to occur [39,266]. Creating hopeful resilience in healthcare providers would also be protective to their interest in continuing to work in their professions, likely easing the problems that have arisen from patients using emergency departments for primary care during quarantine [267].

Similar strategies to those successful in reducing stress and anxiety in healthcare providers may be appropriate for educators to consider if the threat of another novel bat-originating coronavirus is imminent if quarantine is involved. However, research is required in this regard to determine the applicability and success these strategies in relation to educators.

If these recommendations are accepted in response to another novel bat-originating coronavirus pandemic inducing quarantines, fear-responses in the public will decrease in proportion to the number of people who develop a hopeful resilience to the pandemic rather than a fear-response. As such, this decrease in fear-responses will concurrently decrease emotional behavior, such as panic buying, violence against ethnic groups and children, suicidality, maladaptive coping strategies (including over-eating, drinking, and substance use), long lineups at emergency departments, and environmental degradation from poorly disposed infected materials.

The recommendations that have been made are ones that are practical, possible and backed by peer reviewed research within the purview and requirements of public health investigations—no recommendations were made without each of these qualities. As such,

recommendations that were avoided were ones depending on legal challenges to percentage donation limits to the WHO of private companies or individuals [268], the acquisition and use of large datasets from social media [269], or reconsidering the ethics related to media reporting [270,271]. If recommendations related to future bat-originating coronavirus pandemics are to be made regarding these important and continuing issues regarding fear-responses to these pandemics brought on by quarantines they will be considered, discussed and solved outside the confines of this researched perspective.

Limitations

This analysis has been undertaken from the perspective that the psychological and social effects of quarantine related to bat-originating coronaviruses are relevant in considering fear-responses to pandemics. As such, directing this analysis from the perspective of postmodern thought—taking into consideration the use and interpretation of large datasets by media—has been assumed both relevant and most appropriate in this regard. In contrast, if it is thought that reducing mortality and morbidity in populations with respect to bat-originating coronaviruses is the only relevant concern with respect to fear-responses in these pandemics, then interest in a continuum between resilience and fear-responses regarding these novel bat-originating coronaviruses could be thought irrelevant. Instead, under this condition, what would be thought important—from the perspective of governments and healthcare providers concentrating on reducing mortality and morbidity in populations by issuing directives for quarantines—is actually maintaining fear of bat-originating coronaviruses as the only effective response. Promoting hopeful resilience with respect to these coronavirus pandemics, from this standpoint, thus would mean what were considered appropriate and necessary precautions by government agencies and healthcare providers would not be consistently maintained in working towards a reduction of pandemic-related mortality and morbidity.

However, this type of perspective of governments and healthcare providers has been called into question with respect to evidence based practice as both inappropriate and fundamentally flawed [272] as these type of population-level health outcomes are not designed to consider patient values and preferences. Evidence based practice has been defined as the integration of the best available evidence with clinical expertise and patient preferences [273]. In this regard, decreasing mortality and morbidity in populations with respect to bat-originating coronaviruses may not be of prime importance to all individuals—this is especially so when people are more likely to die of other treatable diseases during a pandemic [274] but are unable to receive timely care because of quarantines and a reduction in healthcare providers resulting from cognitive bias. To avoid what has been recognized as this error, it is suggested that evaluations of evidence based practices should be focused on shared decision making between healthcare providers and patients [272].

To the extent that media interpretations of responses by the WHO and healthcare providers have focused on morbidity and mortality concerning bat-originating coronavirus pandemics in calling for quarantines they have then moved away from the important features of this evidence based practice—asking patients what matters to them, sharing information and empowering decision making [272]—the things that promote hopeful resilience. In effect, patients become effectively resilient when practitioners “do the right thing the right way” [272]. It has been shown that COVID-19-related fear in producing cognitive bias is a powerful predictor of hopelessness [275]. Changing how an issue is framed has been found to influence both decision making and metacognition [276]. Regarding quarantines with respect to bat-originating coronavirus pandemics in relation to postmodern thought, this means moving along the continuum from endorsing and continuing fear-responses that create cognitive bias to supporting hopeful resilience in being able to cope with these pandemics—as has been recommended with this perspective.

7. Conclusions

Postmodern thought is an effective means of gauging fear-responses to quarantine imposition in relation to bat-originating coronaviruses with respect to data gathered and interpreted from large datasets, identified and disseminated by media. The result is a continuum ranging between the hopeful resilience people generally demonstrated in basing their decisions on what they personally valued during the SARS pandemic and the “psychological COVID-19 syndrome” of intense fear catalyzed by cognitive bias that has been witnessed throughout this current pandemic, especially in healthcare providers. Responses to media dissemination of data regarding quarantine enactment for future bat-originating pandemics can thus be interpreted as falling somewhere along this continuum and understood as such. In making these types of future assessments, it must be recognized that actual rates of death in comparison with those infected is not the primary determinant of the fear-response, as the rate for SARS was found 10 times greater than that of COVID-19—yet the fear-response related to each was found diametrically opposed and substantially greater for COVID-19. Fear-responses with negative outcomes, particularly in healthcare professionals, have both short-term and long-term detrimental repercussions for individuals and society as a whole. Consequently, it is not reasonable that the declaration of a pandemic by the WHO be conflated with the introduction of quarantine. Rather, the principles in considering quarantine envisioned by the healthcare providers successful at managing the SARS pandemic are available as an evidence based guide. When quarantines are the result from this assessment in relation to future bat-originating coronaviruses, strategies that reduce cognitive bias and promote evidence based practice, as well as increase hopeful resilience, should be those supported and maintained to mitigate prolonged negative consequences.

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