SUPPL 2- Residual questions

Table 1: Residual Questions from literature

1	Given the limitations described, it would be useful to augment studies with other pragmatic trials outlined here, such as preference, SMART, and stepped wedge designs that have higher external validity
2	As the evidence base grows, it is also important to understand if treatment effects vary across groups.
3	We conclude that "[t]here is an urgent need to address important evidence gaps"including the specific cross- border health measures applied, the forms of mobility being controlled, and the context in which they are applied
4	These studies had an important role in helping define criteria for clinical diagnosis of Covid-19, guiding clinical practice and provided early indicators of future research priorities–nevertheless, when observational evidence is generated at such an early stage, and with evidence acquired soon thereafter, these clinical criteria may be restrictive and would need to be revisited and updated.;
5	This different risk factor profile could mean varied clinical characteristics and outcomes compared to HICs, emphasising the need for clinical studies in settings with different demographic, epidemiology, and income patterns.;
6	These data highlight the need for studies conducted early in an epidemic to include different at risk populations, including patients with different degrees of severity and cases from non-hospital settings
7	The study of public attitudes toward evidence in less democratic countries such as China and Singapore would be an extremely interesting future research avenue.;
8	The question remains then of course which factors influence performance evaluation in the eyes of citizens, knowing that such observations are not necessarily impartial.
9	our findings indicate that volume came at the expense of trustworthiness and interpretability, and points to a critical need to rethink how funders, multilateral organisations, governments and scientific organisations prioritise, fund, coordinate and communicate science in the context of pandemics and public health emergencies.;
10	This further speaks to the necessity for additional research focused in lower-resource settings that involves local investigators as well as the need to address disparities regarding equitable research capacity for developing evidence to inform decisions and equitable access to evidence so that LMICs have the resources necessary to respond effectively to pandemics.;
11	As such, the findings presented here signal an urgent need for global EIDM guidance that countries can use to inform nimble systems and infrastructure that provide capacity for prepandemic, during and postpandemic decision-making.;
12	Further, this study highlights the need for intrapandemic research investment including linked networks of advisors for supporting decision-making.;
13	the implementation and effectiveness of solutions to reduce 'evidence inequities,' including disparities in access, generation and interpretation capacity, for a more just global response to future pandemics and public health emergencies
14	The expert–politician nexus is a social interface that needs established forms of exchange and a good fit with the politico-institutional features of the system.
15	Further researches must address the psychosocial aspects of epidemics.
16	there is a need to survey access to and utilization of in-person and remote healthcare resources throughout the country in both urban and rural areas. ; antibody therapies
17	further work is needed to understand and dismantle the impacts of racism ;

18	There is an abundant opportunity and need for clinical trials investigating therapeutics for COVID-19 in pregnancy. ;
19	Another specific area of need in COVID-19erelated research is the identification of prognostic markers in pregnancy ;
20	Research is needed to compare the variability in the viral burden and shedding in pregnant vs nonpregnant individuals;
21	to determine whether the natural shift in immunity in pregnancy impacts the immune response in pregnant vs nonpregnant people; and
22	track the time course of development and durability of antibodies during pregnancy, including transmission in cord blood and breast milk.;
23	A significant need remains for research into the incidence and mechanism of maternal-fetal disease transmission, especially in light of maternal vaccination and monoclonal
24	Researchers need to carry out a thorough data cleaning process and be aware that their results may not be easily generalizable with different premises or in different circumstances;
25	The evidence on the effect of different strategies for lifting border closure was inconclusive.;
26	Researchers are encouraged to conduct a larger number of better-designed observational studies to examine the effectiveness of different travel policies mainly on health systems and public health capacity and the effectiveness of travel policies when deal- ing with a new strain of the virus and in light of vaccination rate
27	Further research into interventions to promote physical distancing behavior is needed. ;
28	These intervention components are constructs that need to change (theoretical domains), the means to change the behavior (policy categories, intervention functions), strategies to change behavior (the BCTs), how to deliver the interventions and the mechanisms through which BCTs work (the MoAs).;
29	there is a need to evaluate emerging evidence to promote physical distancing during the ongoing COVID-19 pandemic.
30	we recommended that: there is more involvement of decision scientists and risk analysts in COVID-19 decision making, who have largely been absent thus far;
31	proactive measures avoiding policy delay should be followed to reduce the rate of infection and excess deaths
32	The main objective of these guidelines is to arouse scientific interest, thus facilitating studies of the pathogenic mechanisms that may aid the early detection and correct management of long COVID-19 manifestations.
33	a finding that triggers further and longitudinal analysis of protective immunity to SARS-CoV-2 in order to answer the question of long-lasting protective immunity against SARS-CoV-2.
34	The need for rethinking on sustainable vaccine financing models in the fight against the COVID-19 is no more optional. This is because of the associated burdensome cost of procuring and administering COVID-19 vaccines, coupled with the fact that GAVI Alliance (formerly the Global Alliance for Vaccines and Immunisation) and other donor partners are gradually weaning off financial and logistical support for many LMICs including Ghana.
35	The feasibility of developing a robust economic evaluation of COVID-19 vaccines is in question, Given the uncertainty regarding the impact of vaccination on transmission, an economic evaluation could be used to demonstrate the need for evidence generation on this topic
36	there are many uncertainties about the biology and natural history of COVID-19, and these present unique challenges for conducting economic evaluations for COVID-19 vaccines;

37	there is no clear explanation for the variety of case fatality rates and virus severity in different settings (although age and ethnicity have been suggested as potential factors and the duration of natural immunity occurring from infection and the impact of new variants is not yet well-understood.;
38	Countries face different baseline situations and political priorities, which highlights the need for local analyses to ensure policy is informed by context specific evidence;
39	the COVID-19 response in Ghana has highlighted the need to look within health systems for influential local leaders who are able to build trust and social capital with communities for effective communication and collective IPC compliance;
40	Future IPC policies must inculcate perspectives from the politics and economics of IPC practices and employ a variety of multidisciplinary approaches required to broaden the scope of IPC programs.
41	Efficient ways to incorporate evidence-based ICU care into clinical practice during the pandemic are urgently needed.
42	The need for responses that address sickness presenteeism and leave provisions, workforce mobility, casualized workforce, asymptomatic carriers, access to PPE, and staff residence was identified;
43	The need to balance COVID-19 control with compassionate, person-centered care for older people suggests trade-offs that need to be examined more closely.
44	questions about the speed of vaccine development and long-term side effects, and expert opinion on challenges with the COVID-19 vaccine were proliferating in the national media;
45	To reach the levels of reasonable immunity or for successful mass COVID-19 immunization, tailored and community-based interventions that can address the political divide and risk perception differences will be needed along with the plans to distribute the COVID-19 vaccines;
46	Along with vaccine deployment and distribution efforts, additional research is needed to understand the complex interplay of a variety of individual and social characteristics that influence vaccine hesitancy to ensure broader coverage with COVID-19 vaccines.
47	Nonmedical options for reducing transmission and variant mutations are needed to enable at-risk populations to avoid infection;
48	What if scientists, engineers and others could build technological options for real-time identification of the presence of COVID-19 and its variants?
49	It is clear that further research is needed to elucidate the best method for the preoperative screening of patients for COVID-19, as well to characterize the postoperative course and complications for patients with asymptomatic disease.
50	Future epidemiological studies are needed to further investigate the risk factors associated with adverse outcomes in patients with COVID-19 and monitor the long-term impact on physical, mental, GI and dermatological health and children with prenatal exposure to SARS-CoV-2;
51	Studies are needed to monitor the course of residual lung damage such as lung fibrosis, bronchiectasis or other structural abnormalities shown on radiologic imaging, and to estimate the impact of COVID-19 infection on subsequent lung health, pulmonary function, exercise capacity and health-related quality of life among survivors;
52	international studies are needed to investigate the varying risks of adverse outcomes in different ethnicities;
53	Population-based studies with longer follow-up time are needed to assess the impact of COVID-19 on rare but severe outcomes
54	How is COVID-19 affecting children, Are they getting the disease in a milder or asymptomatic form orAre they fully resistant to the disease, Do children play a role in the virus circulation and transmission to adult?;

55	Both large serological investigations and systematic surveillance of acute respiratory diseases are needed to understand the role of children in this new pandemic.
56	Further research is needed to understand the opposition to the COVID-19 vaccine and improve the generalizability of the findings of our study in other populations. Collective efforts from HCW, physicians, policy-makers and leaders including community leaders, politicians and religious leaders should come forward to address the importance of vaccines in children and depolarize the 'pro'versus 'anti' vaccination alignment, which can reduce vaccine hesitancy in parents.
57	A major unanswered question for patients with cancer is whether the use of specific drugs impacts vaccine immunogenicity
58	innovative technologies and techniques are needed to simplify vaccine distribution, by minimising the need for a cold chain, reducing packaging footprint, streamlining administration, and reducing waste
59	This study also highlights the need to directly engage with vaccine-hesitant subgroups, including more junior-level and Black Asian Minority Ethnic, HCWs, understanding how a history of exclusion and racism might shape attitudes and practices in relation to vaccination
60	There seems to be no research looking into the factors that influence vaccination uptake in patients living with a mental illness.
61	Further work is needed to develop region and country based strategies to increase immunization rates tailored to common and unique socio-cultural factors.
62	how to distinguish between individuals who are truly resistant to vaccination and those who are simply hesitant and require the right incentive, such as being offered a vaccine that is acceptable to them.
63	Based on these theories, future studies may explore other mediators, such as the loss and gain of other types of resources (eg, financial/personal resources) and other types of cognitive responses (eg, positive reappraisal).
64	It is particularly important to identify modifiable psychosocial mediators because COVID-19 might become a persistent health threat, and such control measures might be inevitable.
65	Future research can enhance the proposed model in a few directions. For instance, we assume that the vaccine demands are known and deterministic, since public health authorities relied on national population registry in allocating vaccines. Furthermore, comparing the model outcomes with actual allocation decisions of policy makers in practice and investigating potential gaps could be another future research direction of our study.
66	Nevertheless, the big question is, regardless of the need for a cohesive societal effort to overcome pandemics, why will citizens ultimately comply?
67	There is a host of data surrounding racial characteristics of COVID-19 patients by sex and gender, however, there is a clear lack of attention towards studying the nuances of sex/gender disparities within minority population's outcome data. More research is needed to provide more context to race/ethnicity and sex/gender disparities.
68	However, many aspects of COVID-19 still lack clarifying evidence, particularly for the population of newborn infants.
69	However, there is no published health policy- related data from these centres which we can readily compare.
70	To date however, scientific evidence of the general public's attitudes towards the prospective COVID-19 vaccine remains unavailable in the UAE. Because of its potential to undermine the effectiveness of any national immunization program, understanding ahead of time its prevalence in society is key to the success of any national

	strategy against the COVID-19 pandemic. Not only does this make it challenging to disentangle causal relationships between the COVID-19 vaccine preference outcome and its determinant factors; an individual's revealed preference for the vaccine once actually available might also be different from her/his initially stated vaccine preference. Moreover, given the evolving nature of the pandemic, individuals' perceptions thus preferences for the COVID-19 vaccine might also change overtime, as such it would be equally interesting to address such behavioral dynamic in prospective investigations. In this case, experimental and/or longitudinal study designs often offer suitable alternatives and should be considered to validate our cross-sectional findings.
71	Evolving situations such as we are witnessing with COVID-19 highlight the stark need for new modes of social organising, and the potential affordances of dialogue between evidence makers, decision makers, and the communities they serve. How such collective modes might be fostered during a crisis characterised by the need for physical distancing is a challenging question, but essential for effective responses.
72	There is a need to explore other variables (e.g., social capital, culture, beliefs, values, etc.) that influence public crisis management in the future. Thus, additional research on public awareness of the danger of anxiety due to concerns over employment, family health (spreading the infectious disease), and financial difficulties of individuals infected with or undergoing treatment for infectious diseases is warranted.
73	Further research is required to better understand the effect that shocks of this magnitude have on the health system and, particularly, on essential services. It is crucial to understand which services are most vulnerable to being displaced and the levels of funding required to ensure their continued provision, as well as identifying which non- urgent services can be temporarily delayed without causing lasting impact.
74	Future studies can improve on the methodology as more data and information become available and can expand the range of countries to explore how the MSI and IRI correlate with the change of COVID-19 epidemiological indicators to provide feasible policy implications.
75	Finally, evidence generated throughout the pandemic presents further opportunities for more tailored research and opportunities for an enhanced understanding of local needs to overcome barriers to vaccine uptake.
76	Thus, the current randomized evidence renders remdesivir to be more promising for the treatment of hospital-ized COVID-19 patients, but still unproven because of remaining un-certainties about whether there is a clear benefit on mortality.
77	Future research will investigate the relationship between vaccination hesitancy and vaccination uptake behavio
78	Nevertheless, data regarding the fractionofcasesanddeathsemergingfrom nursinghomeswerenot available for most countries. We were not able to investigate the effects of the general policy interventions on nursing home epidemics at this point. Future studies should emphasize on how adding and removing intervention policies affect the transmission of the virus, especially its new mutants such as the Delta variant, for decision making on lifting containment policies.
79	As with all particular issues related to the COVID-19 literature, there are many additional steps to be taken in order for more light to be thrown on the issue of fine optimality. As

	countries adjust their responses according to the severity of new waves of the pandemic, new data will become available and the samples for performing multivariate analyses will grow, thus enhancing the validity of the findings. Moreover, data not only on fines but also on some of their possible drivers will also become available as the literature on COVID-19 expands. Therefore, panel analyses on the drivers of fines and new variables, not considered by the present paper, could complement the present analysis. Moreover, questionnaires and relevant surveys could be also used to directly investigate the logic be-hind policy makers' decisions on fine settings.
80	Furthermore, our exploration of the 'core group'concept could be extended by analysing the experts'disciplines, and if the topics discussed fell within the remit of SAGE and these experts'judgement. Ethnographic observation would be needed to understand the whole process accurately.
81	As a society, do we continually tradeoff and prioritize COVID patients at the expense of non-COVID patients, especially those who continue to flaunt public health measures, refuse vaccines and spread misinformation?; Are we willing to accept prolonged, sustained disruptions to healthcare systems and society, while continually delay care of non-COVID patients? This review hould spark further research and debate on how to achieve balance alongside determining healthcare policy between pan demic response and non-pandemic population health, particularly given the continued spread of emerging variants of concern contributing to prolongation of the pandemic
82	The United Nations, the WHO, mental health charities and researchers have all called for the urgent need for sustained action on mental health both during and after the pandemic.4 5 In this respect, there is also a major need for long- term research examining the experiences and needs of people as still relatively little is known at this time.
83	It is incumbent on future research to determine whether other women of color, White women, and conservative women leaders across contexts have also responded in proactive, transparent, evidence-based, and socially minded ways or whether these women mayors are truly anomalies.
84	More research is needed to inform how institutions in Africa can conduct Knowledge Translation effectively in emergency settings.
85	For rapid reviewing, we need to develop realistic guid-ance and standards tailored to its various types (scopingvs. effectiveness vs. unintended consequences vs. imple-mentation) and modes ("rapid vs."emergency") and crit-ically re-examine review processes and functions; Looking to the future, it would beimportant to explore options how this process could befurther facilitated, including through the application ofadvanced digital technologies and automation
86	Accordingly, future bibliometric studies should address these limitations and further examine the evolution of scientific knowledge about COVID-19 across different scientific disciplines over time;
87	In order to address the economic, socio-cultural, political, environmental and other (non-medical) consequences of the COVID-19 pandemic, in the near future COVID-19 must appear higher up the research agenda of non-health sciences, particularly the social sciences and humanities,
88	Further research could broaden this population and context, for example, by using true probability samples, collecting data in multiple countries, engaging in field work, and testing a range of public health interventions
89	Understanding potential differential effects on different subgroups of the population, such as low and high numeracy individuals, would help to complement knowledge on the effects

	of quality of evidence communication more broadly, and we thus encourage further research to investigate these relationships more deeply
90	Our study has important implications for policy and programs related to workplace protections, including the need for improving resources supplied to workers in low-wage essential industries related to PPE, testing, and sick leave
91	As COVID-19 workplace policies evolve and continue to demand increased support from employers, there is a need to ensure these are developed with consideration of small, informal employers in high-risk industries. In addition, such policies should support employers with the resources necessary for policy implementation
92	Our findings provide further evidence of the need for more worker outreach and education on standardized policies for job protection
93	Our findings also suggest the need for institutional resources to support regular testing and paid sick leave among all essential workers, including those working in the informal sector
94	Our findings support recent workplace policy changes in California and highlight the need for a wider dissemination of information about the current regulations
95	Our findings also underscore the need for additional resources to be made available to employers and workers to allow more widespread implementation of such policies amongst the most vulnerable workers
96	Our findings support efforts to expand paid sick-leave to all at-risk workers and underscore the need to ensure workers and employers are aware of COVID-19-related mandated workplace policies and resources
97	Rapid community response may be needed to manage advanced disease in COVID-19 if people are to remain at home
98	There is also a need to understand the prevalence of palliative care needs that are not met by palliative and hospice services.
99	The findings of the current study are more aligned with research on the Ebola outbreak in 2014 (Fung et al., 2016), which shows that after the declaration of the emergency, true information circulated more than false information, which points at health information, or where it is the case of an emergency, disseminating in a different way. Further research is needed in this regard
100	In addition, the fact that in our sample twice as much false information as evidence-based information was posted points to the need of finding strategies to bring scientific knowledge closer to the broader population
101	Further studies on how to promote such engagement and its effects in limiting the circulation of false information are needed
102	However, advancing in such democratization requires users to be able not only to have access to scientific knowledge, but also to have the skills to critically assess information and to sort out valid content from falsehood. In this vein, further research should focus on preventive educational interventions that provide users with the necessary skills to access evidence-based information and reject falsehood.
103	As the threat of global disasters and pandemics increases with climate change and population growth, these innovative models fill the need for evidence-based messages, products, and interventions that are developed quickly and respond to changing conditions
104	Further research should examine the feasibility of this model for other public health challenges outside of COVID-19
105	Research should also determine if the utility of this model holds with a range of health areas and if replicated across states.
106	Researchers should also examine if the inclusion of qualitative and participatory research techniques increases positive reception and reach of the messages produced

107	These types of information often involve questioning, doubting, and contradicting institutional communication and can lead to a lack of trust in institutions. In response to that, governments need to produce persuasive information that is “louder” than the disinformation.
108	They need to build or re-build a trust-based relationship with the public that is based on a transparent and accountable dialogue in order to avoid mistrusting attitudes, non-adherence, reactance and conspiracy attitudes among members of the general population
109	The reliance on telehealth to improve access to care during the pandemic has paradoxically exacerbated the health disparities due to race and socioeconomic status that already exist. More research about how to address these disparities is needed
110	For communication experts in research and education we need to advocate for policy and research agendas
111	Against our critical reflections we emphasise the need for evidence-based guidance on healthcare communication during pandemics
112	The implementation of staff surveillance screening strategy detected mild and asymptomatic COVID-19 infections in HCWs and allowed isolation from work to protect the health-care workforce in a large non-COVID-19 designated hospital with hybrid status within a short period. The feasibility of this strategy in the long run requires further evaluation.
113	Many of the included modelling studies, for example, assessed a hypothetical reduction of contacts to mimic an intervention implemented in a school setting, however, the question of how such a reduction in contacts can be accomplished in real life remains unresolved.
114	How vaccinations influence what measures are most appropriate in schools, for example, is currently not being discussed, soon, however, as vaccines become available, this will likely become a question of critical relevance
115	Concerning the identified gaps, it would be advisable to extend the number and types of databases searched. The surprising lack of evidence from specific regions clearly points towards databases with a different geographical scope (e.g. Chinese Biomedical Literature (CBM), Latin American and Caribbean Health Sciences Literature (LILACS))
116	This highlights the importance of rapid evidence syntheses that can deliver answers in a compressed time frame, yet also remain up to date, either through frequent updates or the conduct of a living evidence synthesis.
117	There is an urgent need for empirical research assessing the effectiveness of measures to reduce contacts and to make contacts safer within the school setting
118	While the finding raises potential questions about clinical prioritisation for scarce ICU resources, compared to influenza patients, COVID-19 patients in this age group had similar odds of receiving ventilator support.
119	In the era of misinformation and “infodemics”, public health professionals must not only combat the disease but must also ensure that they are positively engaged in evidence based public health advocacy with accurate and relevant information to underpin discussion on measures to limit the impact of COVID-19.
120	It would also need activities targeted on advancing personal self-efficacy toward preventive practices against COVID-19.
121	Trust development in information sources would be essential
122	Reasons for men’s apparent under-utilisation of testing services deserves further investigation, but highlights the need to have more gender-responsive public health communications and interventions.
123	These findings do not currently provide any robust evidence of the potential adverse impact of COVID-19 among women of reproductive age, including on their pregnancy outcomes—as reported in the studies from cross-sectional surveys—but highlight both the importance

	of further investigation as well as the need to have more rigorous and comprehensive data disaggregated by age, sex and ideally by pregnancy status.
124	While Global Health 50/50 have been able to fill in some of the sex-disaggregated COVID-19 data gaps over the past year, the pandemic reveals that a more formal and sustainable system for reporting sex-disaggregated data is long overdue—and not just for outbreak data
125	This will inform both policy and practice and is in line with WHO recommendations on sex-disaggregated reporting on COVID-19. Moreover, such data is necessary to make good on the SDG pledge to hold governments to account and leave no one behind
126	An empirical question, then, is if the policies adopted resulted in different local government awards, and, further, how these communities differed in terms of their recovery trajectories.
127	While we argued this approach yielded actionable policy insights, how much more we can learn from state–specific surveys compared to nationally administered ones remains an open question.
128	Some of the approaches undertaken by India seemed to have worked out in favour, while some needed better planning.
129	Optimizing the strategies, including identifying community cases via targeted testing, triaging patients of varying disease severities, and adjusting isolation and quarantine practices, require better and more accurate understanding of the transmission dynamics of COVID-19.
130	By accumulating more empirical intervention data from different settings worldwide and utilizing the information in modeling studies, we can better inform policymaking
131	When thrown away, disposable face masks become wastes, polluting the environment, if not disposed of properly. Although these measures' effectiveness in easing the epidemic might be evident, the cost-effectiveness has not been well-documented, especially when costs other than medical care are factored in.
132	The eventual deletion of the Statement from the CDC's website is testimony to the critical need and power of such public vigilance.
133	Future studies are needed to investigate the criterion validity of the CBI scales.
134	Further studies are needed to determine whether the English and Arabic versions of the scales produce equivalent results when used with non-bilingual samples.; The finding that the multiple pressures on the nursing workforce in Lebanon have not resulted in higher levels of work-related burnout need more investigation to identify mitigating and mediating factors
135	The finding that the situation in Lebanon is associated with higher levels of client-related burnout than reported in the international literature is a cause for concern and needs to be addressed to maintain patient safety, enhance nurse wellbeing, and ensure workforce sustainability while preserving patient satisfaction with care
136	Longitudinal studies are required to track changes in burnout over time and their relationship to changing political, economic, and strategic circumstances.
137	First, an inattention to supply chain and logistics.; A second gap is inattention to politics as an implementation barrier or facilitator.
138	It also emphasizes the need for developing culture- and context-specific alternative strategies for people whose socioeconomic circumstances do not allow them to maintain recommended protective behaviours such as "social distancing" and "frequent handwashing."
139	Future exploratory research can look in-depth at the causes of challenges and barriers in COVID-19 preventive practices and risk communications among various sociodemographic groups and how these factors influence the transmission of COVID-19 among them
140	Further research with a more inclusive approach could also explore these challenges among marginalized communities in Bangladesh

141	Moreover, building on the evidence from this study, future research may investigate how to mitigate these challenges and barriers through developing intervention strategies
142	Moreover, the lower comprehension of the COVID-19 awareness campaign among agricultural workers, day labourers, and people with low education levels highlights the necessity of developing risk communication messages tailored to people's social context and need.
143	Mali's COVID-19 research activities highlight the need for coordination.
144	There is a need to ensure refresher training to HCWs including volunteers and reinstated retired HCWs and that this should be included as a recommendation in the guidelines
145	Based on the experiences during the COVID-19 pandemic, there is a strong need for countries to strengthen the guidance provided in their pandemic plans regarding reuse/extended use of PPE and delivery of IPC training to HCWs including volunteers and reinstated retired HCWs
146	This review also identified significant gaps regarding resource allocation
147	Conflicts between economic downturn and control efforts, controversies frequently disseminated on social media, and recurrent waves might have eroded the trust, which urgently needs to be built as the pandemic prolongs.
148	This study found that the participation rate of a free and voluntary population-wide mass COVID-19 testing program was not high. Evidence-based health promotion is needed, especially among younger adults.
149	This reiterates the need for public health outreach and the development of programs and policies to address the disparity
150	Future studies are warranted for continued evaluation of face mask policies across different phases of the pandemic.
151	However, face shields alone have a large escape through brow and downjets, which may make them less effective for source control, and this remains an open research question
152	There is a need to understand how masks can be used throughout the day, by both children (at school) (50) and adults (at work)
153	Research on the efficacy of face shields, including in combination with masks, is needed, along with research into the efficacy of masks with transparent windows for the mouth
154	The impact of using masks to control transmission in the workplace has not been well studied
155	the question of how scientists should communicate transparently remains open.;
156	Should scientists discuss their doubts openly in public risking stress from public exposure or should they involve only decision-makers in the discussion?;
157	This situation highlighted the need for internal quality control before publication, which was amplified by the real danger of causing panic when disseminating results in a misleading way.;
158	transparency of the scientific process is increasingly being demanded by the public and is needed to quickly share and discuss results and methods among experts and policymakers
159	our findings highlight the necessity of face covering in curbing the spread of the disease.
160	This need for an effective and quick appeals process creates specific logistical challenges in health systems where seeking second (and definitive) opinions is not common;
161	The effectiveness of nirmatrelvir–ritonavir and molnupiravir needs to be shown in the real world, and health systems must show that they are properly adapted to prescribe and use these antivirals correctly.;
162	To appropriately address the need for an ethical prescribing approach for these oral antivirals, each health system will need to decide upon a scoring system

163	how might temperature or infrared screenings be promoted in small businesses, schools, houses of worship, and community centers, particularly in hard-hit or under-resourced communities?;
164	Will sufficient personal protective equipment be available and at what cost to protect workers, visitors, and community members?;
165	how compliance and enforcement of statewide mandates on public mask use differ based on contextual factors.;
166	Creative design solutions and systems engineering are needed to reduce the cognitive load for individuals and ease the adoption of social distancing practices in public spaces.
167	Research is needed to explore and understand the challenges experienced by care homes endeavouring to implement these measures and in a way that does not make a home feel like institutional confinement.
168	A stable and safe medical environment needs to fully eliminate the policy defects, to fit the people and focus on mental health of the people.
169	While problem- and emotion-based coping strategies were most commonly adopted by healthcare professionals throughout the pandemic, this study suggests that moral distress and compassion fatigue are still persistent as a result of a lack of support from healthcare managers and supervisors.
170	When is it safe enough to begin community stabilization and incrementally ease lockdown provisions, and how will we know if our efforts are working?
171	There is a need for primary data to guide the structuring and implementation of strategies.;
172	International cooperation, transparency of data, connections between health experts and governmental officials are needed to support nations' management systems.;
173	National and local administrations should coordinate closely and be interconnected to promote a unified leadership and a hierarchical responsibility;
174	need for suitable quantitative models for understanding flow-mediated infection transmission;
175	A NEED TO critically evaluating common assumptions such as 6-feet social distancing and well-mixed airflow;
176	planning control strategies and interventions remains timely and critical. ;
177	This highlights the need for sequencing genomes of emerging pathogens to enable evidence-based policies for development and approval of diagnostics.
178	The COVID-19 pandemic has been characterized as an older adult problem, and social media, among other platforms, have been used by people to share ageist attitudes (eg, posts published with the hashtag "BoomerRemover"). Greater awareness of age discrimination is needed to reduce these behaviors. ;
179	there is an urgent need to expand social security programs through increased government support, such as cash transfers to vulnerable households, in addition to current social security spending. The results highlight the importance of generating on-the-ground survey data to track household living standards during COVID-19 and gathering the information needed to develop evidence-based policy responses
180	This means that negligence claims can continue to be filed for many years after the pandemic has subsided and therefore, there will be a long-lasting need for protective legislature.;
181	Therefore, studies of those respective age groups might elucidate the separate effects of these policies. Prediction of the effects of severe policies including lockdowns is anticipated as a challenge to be addressed in our future research.
182	need guidance for identifying implementation strategies that work;

183	We also will need a research agenda to maximize the generation of new behavioral health and policy knowledge and its translation into action during and after the pandemic;
184	A research agenda for behavioral health and policy to leverage lessons learned during the COVID-19 pandemic is needed to streamline efforts and increase the likelihood of utilization in future pandemic preparation, response, and recovery;
185	We maintain that the erosion of the standards of scrutiny: widens the gap between citizens and decision-makers, reduces understanding of and confidence in policies' effectiveness, increases disenfranchisement, in brief, it potentially undermines the foundations of democracy.;
186	But the question is rather why the scientific case for restrictions was not advocated more strongly, or why, particularly later on, in the winter of 2020, it did not appear to exert sufficient influence on policy.;
187	The scientific advice in these situations needed to be more free to decide the bounds of what needs to be asked and modelled, in accordance with good research practice.;
188	This becomes especially pressing following the need to restrict the emergence of new virulent strains of COVID-19 that could prove resistant to pharmaceutical interventions;
189	More involvement of decision scientists and risk analysts in COVID-19 decision making, who have largely been absent thus far, is needed;
190	Subsequent position papers directly influenced the approach taken for more targeted policy questions, including optimal test, treat and isolation strategies, restrictions on inter-state movement;
191	the contribution of asymptomatic cases to transmission precision lockdown, the need for cash transfers to mitigate the impact on socioeconomic well-being, school closures, and international border re-opening.;
192	Integration of epidemiological, social science and economic analyses, by multidisciplinary teams and with the co-production of evidence with policymakers, will provide the best path forward to meeting the twinned social and public health challenges created by the COVID-19 pandemic in Nigeria and other countries.
193	the need to incorporate social and political sciences so as to develop more sophisticated approaches to knowledge transfer.;
194	Politicians need clear information in a crisis situation without too many uncertainties and caveats
195	Our analysis does, however, indicate that, given the complexity and uncertainty of the situation, there is a need to focus on a decision-making process grounded in data and, whenever possible, prior evidence.;
196	A reflexive decision-making process can help in terms of facilitating data-driven decisions and highlighting the need to create disconfirmable statements (i.e., phrased in such a way that they are falsifiable).;
197	it is vital that policymakers take steps to maximize the quality of the decision-making process and increase the chances of positive outcomes as the crisis goes forward.
198	Hence, all the results could contribute to the current debate of the necessity of restriction policies and the need to convince people within high risk areas to comply.;
199	further investigations on this topic using more specific regional subsamples or other time subsamples are needed to consider public compliance in the appropriateness of health policy design, which matters to the total containment efficacy as everyone counts, eventually.
200	A key research question for the future therefore concerns the role of altruism during the current and future pandemics, such as the extent to which changes in behavior during the current pandemic were caused by altruism and how changes in behavior due to altruism are linked people's values and beliefs in normal times

201	The lessons demonstrate the importance of governance in the focusing of resources, including coordination, priority-setting and the acceleration of much-needed research approvals.;
202	Unlike adults, where clinical, radiographic and biomarker changes are profound, in children the disease is milder with less specific determinants and identifiers. This might misinterpret the disease as less infective and virulent for pediatrics and hence more robust strategies of screening, diagnosis and management are needed;
203	Data from larger studies representing various geographic locations are needed to improve generalizability of the findings.
204	we needed to focus more on asymptomatic person;
205	a strong collaboration is needed between provincial and regency/city as well as central government.;
206	the need for refocusing the budget in order to increase laboratory testing, particularly in four regions with high case numbers which are geographically separated from one another, namely Mimika, Nabire, Merauke, and Biak
207	Ultimately, the question is whether the circulation of viral data can be responsibly contained;
208	Policymakers need scientific guidance to craft interventions that address the long-term indirect effects of the COVID-19 pandemic.;
209	Future work on ethnic minorities will need to take into account the fact that risks to different groups may change dramatically over time in response to public health messaging and social media coverage. In addition, it would be helpful to have repeated observations so that more could be said about changes over time as well as causality: indeed, it would be useful to have patient or lay input into the development of a fuller set of predictors based on possible causal mechanisms.
210	It would also be useful to gather data on the measures that workplaces are now taking to protect workers and customers so that public health policymakers could refine their understanding of what is working.
211	Further investigations are needed to better estimate the COVID-19 incidence as seroprevalence data will be available for most member states.
212	Although there is no evidence of re-detectable positive patients infecting others, it is still necessary to determine whether these re-detectable positive patients will become chronic virus carriers. Further studies on the re-detectable positive patients will be vital for the research and development of a more effective vaccine.
213	It is urgent to find a more powerful evidence-based and virological basis for the integrity of viral RNA and the variation of viral virulence with time through cell experiments in vitro and animal experiments in vivo.
214	What our results do suggest, however, is that future forecasting work should consider the use of the environment to enhance predictions of disease spread.
215	The role of viral load and virus shedding dynamics in asymptomatic and symptomatic cases will further help answer the question of forward transmission and disease length and severity.;
216	Other unknowns include whether there is a difference in the proportion of cases that are asymptomatic according to age (particularly children versus adults), sex, or underlying comorbidities, and whether asymptomatic cases develop long-term immunity to new infections.;
217	Our recommendations for future research also include improved clearer reporting of methods, sampling frames, case definition of asymptomatic, extent of contact tracing, duration of follow-up periods, presentation of age distribution of asymptomatic cases, and separation of pre-symptomatic and mild cases from asymptomatic cases in results tables.;

218	A reliable estimate of the proportion of asymptomatic cases and the burden of disease is imperative in understanding the infection transmission capacity of asymptomatic cases to inform public health measures for these individuals who, according to our findings, appear to pose lower risk of transmission.;
219	Besides the inconsistent perception about the best perinatal care, the major identified gap was related to the inadequacy of training received by our participants regarding COVID-19 disease and infection control measures.
220	Key models have substantially overestimated the sensitivity of LFTs compared with empirical data. An urgent need exists for additional robust well designed and reported empirical studies from intended use settings to inform evidence based policy.
221	Further evidence-based studies are required to understand the altered travel behavior after the subsequent waves and vaccine campaign.
222	There is an urgent need to better incorporate sociological and anthropological expertise in a triangulation approach to the modelling of pandemics.;
223	There is a need for an adaptive science approach which uses the model as an intervention of deliberation in an iterative response to emergent matters of concern.
224	Since these two cases, it has become clear that the path of COVID-19 in this population is as diverse as that for the general population, and that there is a need for ongoing research focused on the virus among those who are pregnant or post partum.;
225	There is also a certain difficulty in ascribing a miscarriage as a consequence of COVID-19 infection that needs to be considered.
226	These results suggest that a stronger focus on deprived and vulnerable communities is needed to tackle future threats from emerging and re-emerging infectious disease.
227	However, the higher risks associated with less advantaged groups at all levels of lifestyle score seen here highlight the need to unpack these mechanisms in order to reduce inequalities associated both with COVID-19, particularly as it becomes endemic, and with future pandemics.
228	More discussions are needed to examine how to strike a balance between protecting the patients' privacy and using online medical behavioral records for public good.;
229	Integrating online medical behavioral data, particularly OMC, into existing disease surveillance systems is highly needed to prevent future EIDs and respond to other known diseases.
230	Further epidemiological investigations and clinical observations are urgently needed to identify the optimal incubation period of severe acute respiratory syndrome coronavirus type 2 (SARS-CoV-2) and formulate rational and evidence-based quarantine policies for COVID-19 accordingly.
231	Further studies are needed to determine the proportion of COVID-19 patients with an incubation period of more than 14 d, and weigh the costs of extending quarantine duration and the potential risks and consequences of the spread of the epidemic during the incubation period.
232	The inconsistency and the lack of strong quality in the methodology of the included studies are proof that more rigorous studies are needed to demonstrate the positive and adverse impact of long-distance truck drivers during the COVID-19 pandemic.;
233	Primary studies to evaluate the effect of truck drivers and the spread of COVD-19 are still needed.
234	However, the transmission of SARS-CoV-2 through faecal-oral route to the community is yet to be established in spite of the available evidence on the SARS-CoV- 1 community spread through aerosol.

235	The presence of SARS-CoV-2 at an infectious dose and the duration of persistence in stools/wastewater are significant aspects that need to be studied and elucidated with a larger number of samples from the public health point of view.
236	However, rapid, effective and simple detection methods need to be developed specific to the environmental samples and implemented through a regulatory framework.;
237	Clarifying the underlying causes for increased COVID-19 risk of infection and mortality of psychiatric patients will provide new important clinical insights.;
238	Research also needs to explore how risks may change over the different phases of the pandemic, stratifying for vaccinated or previously infected patients, who should be protected from COVID-19 infection, and maybe severe outcomes, and for different clinical psychiatric settings (e.g., in inpatient, outpatient, or community samples).
239	Furthermore, knowing that mental disorders, in particular severe ones, are characterized by abnormalities in the immunoinflammatory system, the effect of vaccine inoculation or infection should be studied.;
240	In particular, future research should be focused on evaluating the consistency, strongness, and eventual source heterogeneity in the detected effects, and in identifying factors contributing to vaccine uptake.;
241	Studies on drug safety and effectiveness in people with pre-existent mental disorders and using psychopharmacological treatments are required.