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# Journal Pre-proof

A framework for identifying and mitigating the equity harms of COVID-19 policy interventions

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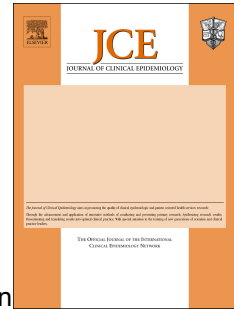
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**Title:** A framework for identifying and mitigating the equity harms of COVID-19 policy interventions

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## Abstract:

**Introduction:** Coronavirus disease 2019 (COVID-19) is a global pandemic. Governments have implemented combinations of 'lockdown' measures of various stringencies, including school and workplace closures, cancellations of public events, and restrictions on internal and external movements. These policy interventions are an attempt to shield high risk individuals and to prevent overwhelming countries' healthcare systems, or, colloquially, 'flatten the curve'. However, these policy interventions may come with physical and psychological health harms, group and social harms, and opportunity costs. These policies may particularly affect vulnerable populations and not only exacerbate pre-existing inequities, but also generate new ones.

**Methods:** We developed a conceptual framework to identify and categorise adverse effects of COVID-19 lockdown measures. We based our framework on Lorenc and Oliver's framework for the adverse effects of public health interventions and the PROGRESS-Plus equity framework. To test its application we purposively sampled COVID-19 policy examples from around the world and evaluated them for the potential physical, psychological, and social harms, as well as opportunity costs, in each of the PROGRESS-Plus equity domains: Place of residence, Race/ethnicity, Occupation, Gender/sex, Religion, Education, Socioeconomic status, Social capital, Plus (age, and disability).

**Results:** We found examples of inequitably distributed adverse effects for each COVID-19 lockdown policy example, stratified by LMIC and HIC, in every PROGRESS-Plus equity domain. We identified known policy interventions intended to mitigate some of these adverse effects. The same harms (anxiety; depression; food insecurity; loneliness; stigma; violence) appear to be repeated across many groups, and are exacerbated by several COVID-19 policy interventions.

**Conclusion:** Our conceptual framework highlights the fact that COVID-19 policy interventions can generate or exacerbate interactive and multiplicative equity harms. Applying this framework can help in three ways: (1) identifying areas where a policy intervention may generate inequitable adverse effects; (2) mitigating policy and practice interventions by facilitating the systematic examination of relevant evidence; and (3) planning for lifting COVID-19 lockdowns and policy interventions around the world.

Key words: COVID-19; equity; inequity; vulnerable; adverse effects; impact assessment;

## Introduction

The World Health Organization (WHO) declared the coronavirus disease 2019 (COVID-19), caused by the novel viral zoonosis Severe Acute Respiratory Syndrome Coronavirus 2, a pandemic on 11 March 2020. (1) Countries have reacted to the virus by putting in place different public health interventions. These interventions are intended to reduce morbidity and mortality associated with COVID-19, while also mitigating the potentially disastrous impact on health systems. Each country is choosing different combinations of policy interventions, some of which are more or less stringent.(2) The menu of policy options includes: school closures; workplace closures; public event cancellations; public transport closure; restriction on internal movement; and international travel controls. Combinations of these policy options are colloquially being referred to as 'lockdown'.

The benefits of these policy options with respect to reducing transmission and flattening the COVID-19 epidemic curve have been enumerated elsewhere.(3) However, some of the adopted interventions risk generating or exacerbating inequities.(4) There is evidence for both the inequitable distribution of harms accrued due to pandemics, and due to the policy interventions in response to them; there is thus a need for pandemic preparedness and responses to adopt an equity and social justice lens.(5–10) In their comment in *Nature Medicine* on 26th March 2020, Wang and Tang stated “Solid evidence for tackling health inequities during the COVID-19 outbreak is in urgent need. The scarcity of health-equity assessment during the current outbreak will halve the disease-control efforts.”(5) While there have been analyses of the wider impacts of the pandemic,(11) there is a lack of evidence-informed tools for detailed and systematic analysis of the type and extent of inequities that may be created or deepened as a result of the actions taken to address the pandemic. Such tools are needed to identify and implement mitigation strategies and to inform an equitable pandemic response.

The aim of this study was to develop a conceptual framework to help various policy actors, including national and local governments, public health professionals, non-governmental organisations, and researchers, systematically to analyse the health, psychological, social, and opportunity cost harms of COVID-19 policies according to the Cochrane PROGRESS-Plus equity algorithm. We worked through specific COVID-19 policy examples for each of the PROGRESS-Plus equity domains in order to demonstrate how the conceptual framework could be used. We identified areas where there may be an inequitably distributed burden of adverse effects caused by COVID-19 public health interventions, or where COVID-19 interventions may widen pre-existing inequities.(12)

## Methods

We built on two previously developed frameworks for assessing the adverse and inequitable effects of public health interventions.(4,9) The Lorenc and Oliver framework describes five categories of harms that may occur when implementing public health interventions without mitigation strategies: direct health harms, psychological harms, equity harms, group and social harms, and opportunity costs.(9) We expanded on this by subdividing the concept of 'equity harms' into the domains specified by the

PROGRESS-Plus health equity framework: Place of residence, Race/ethnicity/culture/language, Occupation, Gender/sex, Religion, Education, Socioeconomic status, Social capital, Sexual orientation, Age, and Disability.(6) After disaggregating the 'equity' domain, we cross-tabulated the PROGRESS-Plus categories with the remaining four adverse effects domains: direct health harms, psychological harms, group and social harms, and opportunity cost harms. This approach allowed us to (1) identify relevant peer-reviewed and grey literature of previously known inequities and emerging evidence of the impacts of the lockdown measures, (2) conceptualise how specific measures may exacerbate, or lead to, inequities, and (3) relate these considerations to potential mitigation measures.

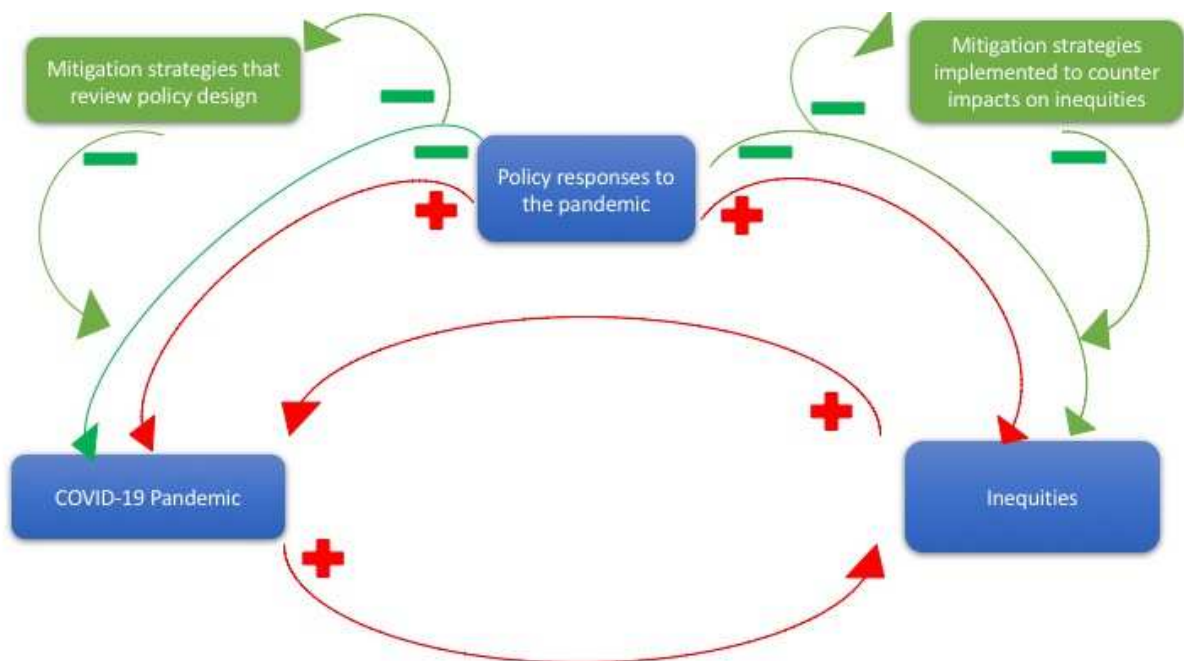
Conceptual frameworks represent a network of interlinked concepts in a particular area. They can provide a structure for understanding a phenomenon or subject.(13) Polit and Beck asserted that frameworks can in fact make research more comprehensible, and generalisable.(14) They are a way to bring together many components on a complex topic, such as COVID-19 related inequity. We drew from the literature on health equity impact assessments (HEIA) to develop and complete a 'proof-of-concept' framework. The World Health Organization's Commission on Social Determinants of Health highlights the importance of undertaking HEIAs during policy development.(15) We iteratively and reflexively developed our framework to cover two dimensions: 1) socially-stratifying equity factors, and 2) types of harms. These frameworks were developed iteratively through application and testing in systematic reviews, epidemiologic studies, and policy analyses.(4,9,12) After testing our framework on emergent reports of COVID-19 equity harms, we refined it to capture policies (rather than programmes); to function on disparate geopolitical levels; and to capture mitigation strategies.(16)

After we developed the framework, we purposively selected from the many emergent reports of COVID-19 policy interventions causing equity harms to demonstrate the application of the framework. We searched the peer-reviewed and emergent COVID-19 literature to identify pre-existing evidence on inequities related to the specific harms associated with a particular lockdown policy. We conceptualised the interplay between a given policy, and its equity harms, by drawing upon this literature, and through expert consultation and consensus discussions. We identified examples of ongoing efforts to mitigate the inequity effects generated by the lockdown measures through expert consultation with the Campbell and Cochrane Equity Methods Group. Systematic review of the literature was not performed given (1) the examples were intended to be illustrative but not exhaustive, (2) ongoing research and evaluation is needed to measure actual equity harms, and (3) the need to provide evidence-informed but timely tools in the context of a rapidly evolving situation to draw attention to inequities.

We included examples of COVID-19 policies to demonstrate how the new framework could be used. We purposively selected our examples of policy interventions from emergent COVID-19 literature and media reports to cover: each WHO region, a range of lenient to stricter policies, one LMIC and HIC example per PROGRESS-Plus domain, and measures being monitored by the Oxford COVID-19 policy tracker.(2) We applied our framework to each COVID-19 policy case study.

## Results

Construction and application of the framework demonstrated that each adverse effect, and each equity domain, can interact with, worsen, and be worsened by others. For example, equity factors such as age, place of residence, SES, ethnicity and occupation may all contribute to physical risk of Covid-19 but also be risk factors for disproportionately feeling the effects of certain policy interventions. (Figure 1)



*Figure 1: The pandemic exacerbates existing inequities, which can in turn exacerbate the pandemic, e.g. low SES individuals needing to work rather than remain in lockdown. Policy responses have the ability to reduce the peak of the pandemic, or, if poorly designed or implemented, increase it. They also have the potential to increase or reduce inequities. Mitigation strategies can be implemented at the review-stage leading to a change in policy design to prevent or reduce risk of inequitable harms, or be implemented alongside lockdown policies to counter or reduce anticipated impacts on inequities. Both approaches may be taken; this may introduce a feedback loop that targets reductions in the pandemic itself, and health and societal inequities.*

Table 1 uses a number of examples of COVID-19 policies to illustrate four types of harms across the domains specified by the PROGRESS-Plus health equity framework. It also provides examples of mitigation interventions. An expanded version of Table 1 can be found in the web appendix.

Table 1 serves as a case study for how to use this conceptual framework. A blank version is included in supplementary materials for readers to use themselves. Table 2 outlines definitions of the domains that



comprise the framework and are used in Table 1. We used examples of specific policies adopted in response to the COVID-19 pandemic to demonstrate the types of evidence that may support identification of a range of equity issues and associated harms. We chose a real-world policy response to the COVID-19 pandemic which has relevance to each of the PROGRESS-Plus categories, including a High Income Country (HIC) and a Low or Middle Income Country (LMIC) policy example. We also identified examples of mitigating interventions that have been attempted so far in the COVID-19 response. Not all mitigating strategies will be effective, and these proposed mitigating strategies may themselves generate a range of adverse effects that are also likely to be distributed inequitably, with many yet to be evaluated.

While each policy example and associated equity considerations provide important insights for policy design and implementation, important observations are made from examining trends across the table as a whole. For example, the same harms (food insecurity; violence; loneliness; depression; anxiety; stigma) are repeated across many groups, and are exacerbated by many COVID-19 policy interventions. This is crucial; it shows that inequitable policy options may generate interactive and multiplicative harms.(11,17,18) For example, poorer women living in poorer communities are at higher risk of acquiring COVID-19 due to the need to continue working, and to crowded working and living conditions. Also, if they become infected, they are at higher risk of poor health outcome considering lower access to, and lower quality of healthcare services. On the other hand, lockdown measures put them at higher risks of physical and mental health risks of inactivity, domestic abuse, and lost earnings. Table 1 also demonstrates that certain mitigation strategies may be implemented in response to more than one equity issue, and that certain lockdown policies may act upon multiple equity domains. Most countries have implemented a ‘package’ of lockdown policies and Table 1 demonstrates the need to conduct such an assessment on each component of the package, to help consider and identify how policies may interact in a way that worsens inequities to a greater extent than had any one component been implemented in isolation.

<b>Table 2: Definitions of terms used</b>	
<b>Equity</b>	The absence of avoidable and unfair differences in a particular condition or state between different groups of people. For example, health equity is the absence of avoidable and unfair differences in health outcomes.(19)
<b>Adverse effects (adapted from Lorenc and Oliver)(9)</b>	
<b>Physical health</b>	Direct or indirect harms that accrue across all spheres of physical health.
<b>Psychological health</b>	Direct or indirect harms that accrue across the range of mental health areas, including but not limited to depression, anxiety, stress, and psychosis.

<b>Group or social</b>	Direct or indirect harms that accrue by targeting social interventions at particular groups or parts of society, thereby worsening the experience of subsets of people within a population.
<b>Opportunity cost</b>	The loss of one or more option, course of action, or outcome that is incurred by selecting an alternative one.
<b>PROGRESS domains (adapted from O'Neill et al)(4)</b>	
<b>Place of residence</b>	Place of residence can mean type of dwelling (house with garden, flat, house of multiple occupancy, informal settlement, prison), location of dwelling (urban, suburban, rural), specialist dwelling (assisted living, care homes, hospice) or lack of dwelling (people who experience homelessness). It is linked to socio-economic status and access to: outside space, public transit, infrastructure, livelihoods, and other services (e.g. health care), social cohesion, and environmental exposures.(20)
<b>Race, ethnicity, culture, language</b>	There are many health outcomes that accrue inequitably due to race, ethnicity, culture, and language. Health risks and outcomes are often stratified between ethnic groups, with worse health outcomes often observed in Black, Asian, and Minority Ethnic (BAME) populations. This may reflect inequities in the burdens of wider determinants of health such as employment and environmental exposures, discrimination, education, or diet. However, concepts such as inherent or biological susceptibility can be invoked to further discriminate against such groups, leading to further physical and psychological harms.
<b>Occupation</b>	Occupation may refer to the status of employment- such as unemployed, part-time, 'zero-hours' contract or full-time employment - or type of employment. These have implications for health equity, with some professions or exposures being more high risk than others. Job security and the type of labour protections in place are important, particularly during times of crisis.
<b>Gender/Sex</b>	Gender-based and biological differences can lead to unequal distribution of disease risks, incidence and outcomes, as well as healthcare service needs. Other differences can be due to inequitable exposure to risk or protections based on sex or gender, such as through sector of employment or legal rights, or discrimination, barriers to services, or the type and quality of service provision that is received.
<b>Religion</b>	Religious affiliation, or lack thereof, can lead to inequitably exposure to harms and/or opportunities. For example religious status may affect access to health services or the appropriateness of the health service offered and received. Certain religious affiliations may experience discrimination, stigma, or even violence.

<b>Education</b>	Education is known to impact on health status due to its relationship with employment, and consequently, income, but also due to the co-location and embedding of other health interventions (e.g. counseling; meal programmes) into educational settings. Education is a fundamental determinant of health and also an effective means of reducing health inequities. Conversely, disruption to education is an adverse mechanism for potentially increasing inequalities; partly by withdrawing the intervention from poorer families, but also because better off families are better able to fill the gap with supplemental homeschooling.
<b>Socioeconomic status (SES)</b>	Higher SES is associated with longer life expectancy and fewer years of poor health due to a constellation of effects including access to clean water, food security, better housing conditions, education, access to healthcare, health and communication literacy, and lower rates of stress.
<b>Social Capital</b>	The original PROGRESS definitions included social capital, which was defined as: <i>“social relationships and networks. It includes interpersonal trust between members of a community, civic participation, and the willingness of members of a community to assist each other and facilitate the realization of collective community goals and the strength of their political connections, which can facilitate access to services.”</i> (4) Social capital can act as a determinant of health and also a social buffer, particularly in times of individual or population-level crisis. It can act via psychosocial pathways, it can enhance financial support, or access to resources. (21) Social capital is closely related to socioeconomic inequalities; it is important not to view social capital, which often has an individualistic focus, as an alternative to effective health, social and economic policies to reduce or even prevent inequities.(22)
<b>Other relevant domains:</b> The PROGRESS domains include a ‘Plus’ feature, which allows for the addition of specific time-dependent or condition-dependent domains. These can vary across contexts. We chose to include age and disability due to their relevance to COVID-19 outcomes.(4)	
<b>Age</b>	While age is itself an unavoidable risk factor for many diseases, certain age groups can often be inequitably impacted by avoidable differences in access to services and technology, vulnerability to exploitation and to the impacts of termination or suspension of certain services such as routine healthcare services or education. Some age groups may have greater resilience or adaptability during times of crisis.
<b>Disability</b>	Disability reduces access to health services.(23) These reductions in access may be exacerbated by closures, uncertainties, and reduced availability of primary care clinicians or other forms of routine care. Uncertainty in access to services can lead to psychological harms for those most dependent on them. (24)

**Discussion:**

We have developed a framework tool systematically to analyse the types of harms potentially induced by COVID-19 policies across different equity domains. The tool also allows for the identification of mitigation strategies.

Many of the included policies, while providing benefits in addressing the pandemic, are simultaneously likely to be generating new inequities and worsening pre-existing ones. Systematically adopting the proposed framework may help to identify inequitably distributed adverse effects, thereby aiding in the development of mitigating policy options in these areas. It may also help with considering the beneficial or harmful impacts of partially or wholly lifting lockdowns, as well as the impacts of the economic recession that will follow the acute response to the pandemic. In the future, it might also provide an input into decisions about when and how to return to lockdown in a second or third pandemic wave.

Ideally this exercise could be undertaken using systematically identified, relevant academic evidence, and would have been undertaken as lockdown policies were being planned and implemented. But in many contexts, the most relevant evidence is not open-access, not complete, or non-existent. Due to the urgency of the COVID-19 pandemic, grey literature, government reports, media articles, and social media posts may be acceptable choices of 'evidence' of potential impacts in some circumstances for such high-speed impact assessments.(25) Reports of increased numbers of domestic abuse victims, for example, are important to include in this exercise, even if there is no appropriate systematic review, RCT, or study that has been undertaken on COVID-19 and abuse. Indeed, research on equity is not prioritised under the urgent conditions of the pandemic. Thus, as with any complex public health problem, decisions about interventions integrate the best available evidence with theory and expert judgment.(26,27) Rapid reviews of literature, including research into the impacts of COVID-19 policy interventions on equity, are ongoing, and Cochrane and others are compiling real-time lists of relevant evidence as it becomes available (Table 3). This view is consistent with that of others working to develop COVID-19 policy recommendations using the precautionary principle to protect groups likely to be disproportionately affected.(28,29)

Table 3 lists resources that could help in rapidly assessing COVID-19 emerging literature for local, regional, and national contexts, across multiple topics. These sources are live at the time of writing.

Table 3: COVID-19 evidence to consider when applying this framework to different contexts:	
Resource	Description
<a href="#">Cochrane COVID Rapid Reviews website</a>	Providing evidence to front-line staff, policy makers, and researchers.
<a href="#">Evidence Aid</a>	A list, by topic, of emerging literature on COVID-19, including academic research and guidance.
<a href="https://www.nejm.org/coronavirus">NEJM COVID Series https://www.nejm.org/coronavirus</a>	A collection of articles and other resources on the Coronavirus (Covid-19) outbreak, including clinical reports, management guidelines, and commentary.

<a href="#">EPPI-Mapper</a>	COVID-19: living map of the evidence - <a href="#">EPPI-Mapper</a> , a living map of published evidence related to COVID-19.
<a href="https://covid-evidence.org/">https://covid-evidence.org/</a>	COVID-evidence is a continuously updated database of the worldwide available evidence on interventions for COVID-19.
<a href="https://www.crd.york.ac.uk/prospéro/">https://www.crd.york.ac.uk/prospéro/</a>	International prospective register of systematic review protocols, which is fast-tracking COVID-19 review protocols for reviews concerning humans and animals.
<a href="https://www.epistemonikos.cl/living-evidence/">https://www.epistemonikos.cl/living-evidence/</a>	Living evidence Repository for COVID-19 by Epistemonikos, a non-profit.

In our framework, we have in some cases selected supranational examples - such as people living with disabilities who experience incarceration across South America - and in some cases, we have chosen neighbourhood-level examples - such as the Swedish-Somali neighbourhood in Stockholm. This is intentional, and serves as a reminder that an exclusively national-level lens can miss the magnifying impact of important global trends, or, conversely, overlook local-level heterogeneity.

Some governments, once they have been made aware of inequities, have attempted to marshal the fast-moving COVID-19 response in order to mitigate them. In the UK, the government has recently made methadone available at pharmacies without a prescription.(30) After initially banning alcohol sales, a French local authority changed their policy after fears that alcohol-dependency meant dangerous detoxification alone during the pandemic.(31) The Swedish government found that multigenerational housing combined with risk groups was causing increased rates of COVID-19 in the Swedish-Somali community, and so made housing available for high risk members of the Swedish-Somali community.(32) In Spain, universal basic income is being considered as an effort to avert coronavirus economic disaster.(33) However, more can always be done; domestic abuse is increasing due to lockdown requirements for victims to stay home with their abusers,(34) and, in Canada, asylum seekers are being turned away due to international travel restrictions.(35) For every example of a mitigating policy intervention, there seem to be many more groups whose needs have been neglected.

The goals, timing, and outcome prioritisation of COVID-19 policy interventions reflect political considerations. For example, political orientation may be reflected in an emphasis on personal responsibility and individual-level behaviour change interventions (e.g. an exclusive focus on individual hygiene behaviours) as opposed to population level measures. Similarly governments with neoliberal orientations may prioritise interventions which preserve the economy. This may manifest itself in political choices to have less stringent or shorter lockdown policies, or in how long it took to lock down

in the first instance. Some of these market-oriented decisions may encourage inequities. Even choices aiming to protect health services may inadvertently increase existing inequities in care seeking and health care use.(36) The framework presented here may also serve as a tool to advocate for more attention to be given to equity issues in contexts where they receive less political priority, by exposing unfair and unjust harms.

The nature of inequities is that they co-exist across different levels of society, and can incur interactive and multiplicative effects among the most disadvantaged. (37) This can be shown by the repetition of inequities across Table 1. For example, inequitable distributions of education disruptions were highlighted in the gender category in LMICs, and also in the education category in LMICs and HICs. The impact of loneliness occurs multiple times as well. The pandemic will likely exacerbate these inequities, tipping those groups already on the margins of society, economic viability, and survival, over a cliff-edge of uncertainty and life-changing adverse effects.

There is a serious risk in the COVID-19 pandemic of LMICs bowing to international pressure to make the same policy choices as HICs. This may not be appropriate in all contexts because of variations in baseline risk, resources, health and other system-level factors.(38) Adopting many of the same policy options, such as 'staying at home' is effectively impossible in many contexts, such as informal settlements, crowded dwellings, and those without access to potable water or latrines. The country context will strongly mediate the effects of COVID-19 policy options; the same policies may generate different burdens, and patterns, of inequities in different countries because of contextual and other variations.(39) In considering this, a wide definition of context should be adopted, which could include the socio-economic characteristics of populations, culture, ethnicity, geography, legal environments, health and other systems, social norms, community support mechanisms, and many other considerations which may affect the implementation and effectiveness of interventions.(39)

Policymakers should be actively taking these equity groups into account when choosing their COVID-19 policy packages and how they are implemented. When making decisions about COVID-19 policy options, governments should adopt an approach that considers both the benefits gained in transmission reduction as well as the harms accrued (and to whom). When the first and subsequent waves of COVID-19 are dealt with in a reactionary way, this framework can inform the strengthening of pandemic preparedness plans proactively in the future. These decisions could be informed by decision analytic approaches to encourage costs and benefits options to be compared across multiple domains.(40)

There are several limitations of this conceptual framework. First, any effort to mitigate inequities risks incurring them. It may also be difficult to operationalise an equity lens for those populations or groups that fall between or among categories. One way to consider particularly vulnerable groups would be to conduct this exercise for a single vulnerable population, such as displaced persons, and work through the entire table for that specific population.

It must also be remembered that the potential inequitable effects of policies that we identify, and inequities in outcomes, in general reflect underlying structural inequities, which the pandemic has brought into sharper relief. Addressing the underlying social determinants of inequity in parallel is itself an essential intervention to mitigate the effects of this and future pandemics.(41)

Though this framework represents an approach to assessing potential equity concerns, it does not enumerate all, or even most, areas in which equity concerns may exist. Rather, it is a starting point to encourage others to work toward cataloguing unintended consequences of COVID-19 using an equity lens. While our approach is in no way comprehensive, it may be a helpful tool to use in different settings. It may also be helpful as a way of considering the applicability of COVID-19 policies and other interventions across different contexts. This framework is also not COVID-19 specific. We would encourage the thoughtful and deliberate consideration of inequities as best practice in policy-making, even - or indeed especially - in a global crisis.

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	Country COVID-19 policies		Evidence of potential harms				Interventions
			Physical	Psychological	Group/social	Opportunity cost	
Place of residence	LMIC	People living in shanty towns in South Africa have been targeted (1)	Infection (2–4)	Mental health (4)	Street vendors; informal workers (5,6)	Economic loss; unemployment (7,8)	Topping up child support grants (9)
	HIC	Closure of green spaces.(10,11)	Child injuries (12)	Mental health (13,14)	Homeless (15)	Inactivity (16,17)	Parks(10) housing (18)
Race, ethnicity, culture, language	LMIC	Lebanon's government quarantined refugee camps.(19)	Decreased medical care (20)	Anxiety, PTSD (21–23)	Stigma, disenfranchisement (11)(24)	Forgoing more effective interventions (8)	Provide food, medical supplies (25,26)
	HIC	Sweden's COVID-19 cases proliferated among immigrants.(27)	COVID-19 cases (27)	Stigma (28)	Access to expert advice.(29)	Population level alternatives (30)	Make housing available (28)
Occupation	LMIC	Informal workers in Nigeria and Kenya could not work; (31,32)	Food insecurity (33)	Stigma (34)	Resistance and protests (35)	Economic output (36)	Cash payments (32)
	HIC	Essential workers at higher risk.(37)	COVID-19 cases (38)	Stress (38,39)	Eviction (40)	Other illnesses (41)	Protect workers (42) (43)
Gender/sex	LMIC	School closures have unique impacts on girls.(44)	Food insecurity (45)	Child marriage (46) mental health (45,47)	Gendered educational attainment (48) (49)	Foregoing education (50)	Representation (51)
	HIC	In UK, home unsafe for some during Lockdown.(52)	Abuse (52–54)	Abuse(53,55)	Migrant women (56)	morbidity (57,58)	Representation (43)(59)
Religion	LMIC	Indonesia had high rates of COVID-19.(60)	Smoking risks (61)	Stigma (62,63)	Unhealthy commodities (64)	Displacing effective interventions (65)(66)	Banning <i>mudik</i> (60)
	HIC	Certain UK religious groups may not be receiving COVID-19 news (67,68)	Hate crimes, assaults (68)	Stigma (69)	Preventing traditional practices (70)	Foregoing faith-based interventions (71)	Faith organisations may provide help (71)
Education	LMIC	90% of learners out of school (72)	Food insecurity (73)	Anxiety, stress (74)	Poorer families (75)	Education.(44)	Remote learning (44)
	HIC	Most US schools closed until September (76)	Food insecurity (77)	Anxiety, stress (74)	Health workers (78)	Absenteeism (78)	'take-out' meals (79)
Socio-economic status	LMIC	Lebanon restricted informal workers (80,81)	Food insecurity (82)	Stigma, stress (80)	Protests (83,84)	Education (85,86)	Fiscal measures.(87)(88)
	HIC	New Zealand's government enforced border closures.(89)	COVID-19 risk in Māori (90)	Mental health (91,92)	Māori & Pasifika (91)	Tourism sector (89)	Avoid exacerbation inequalities (93,94)
Social capital	LMIC	Restrictions risk community networks (8)	drug adherence (95)	Stress (96)	Cohesion (97,98)	Future local projects (99)	Remote support (100)
	HIC	'Snitch lines' and fines adopted in Ottawa, Canada.(101,102)	Decrease treatment seeking (103)	Depression (104)	Stigma, decreased trust (105)	Displace more effective alternatives (106)	Remote support (100)
Age	LMIC	Vaccine programmes suspended in Ukraine (107)	Preventable diseases (108)	Mental health (109)	Children of poorest parents (110)	Increased inequalities (111)	Avoid suspending vaccines (112,113)
	HIC	UK and US are isolating the elderly and those living in care homes	High rates of COVID-19 (114)	Loneliness, depression (115)	Need for health and social care (116)	Staggered release (117)	Support lines (118) Access to care.(119)
Disability	LMIC	Some South American prisons halted visits. Prevalence of disabilities high in incarcerated people. (120)	High rates of COVID-19 (121,122)	Mental health (123)	Stigma (124)	Visits reduce recidivism (123) Riots (120)	'Decarceration' (125)
	HIC	Canadian children's autism therapy disrupted.(126)	Risk of COVID-19 (127)	Backsliding; stress (126,128)	Regressions in skills (129)	Access to information(130)	Involve affected groups (127) (131)

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What is new?

- COVID-19 lockdown policies particularly affect vulnerable populations, exacerbating pre-existing inequities, and generating new ones.
- We developed a conceptual framework for identifying the equity harms of COVID-19 policy interventions
- We found examples of inequitably distributed adverse effects for each COVID-19 lockdown policy example, stratified by LMIC and HIC, in every equity domain.
- Systematically applying this framework can help to identify areas where a policy intervention may generate inequitable adverse effects; mitigate policy and practice interventions by facilitating the systematic examination of relevant evidence; and plan for lifting COVID-19 lockdowns around the world.