

Mitigating Unintended Harms of COVID-19 Public Health Measures among Low Income Populations

Rapid Review

June 12, 2020

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[12/06/2020]

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Introduction

Timiskaming Health Unit conducted a rapid review on the harms associated with low income populations staying at home during a pandemic. Harms associated with pandemics can be significant. The intention of this review was to explore harms specific to staying at home and to share recommended actions for mitigating these harms (Hawryluck et al., 2004; Jalloh et al., 2018; Reynolds et al., 2008).

This review identifies and synthesizes literature published over the last seventy years including during the COVID-19 pandemic. The study included in this review focuses on worsening anxiety and depression among populations exposed to quarantine and staying at home during a pandemic. Grey literature sources used to determine mitigation strategies focus on recommendations to address harms associated with violence and domestic abuse, physical harms, food insecurity and worsening health and mental health. This review is intended to serve as a resource for national, provincial, and local health officials and policy makers. The review addresses the research question: *What is known about the harms being experienced by community dwelling low income populations from staying at home for long periods of time during current or past pandemics?*

Key Findings

- Overall, evidence demonstrating the effects of quarantine & staying at home among low-income populations during a pandemic was scarce.
- The main outcomes associated with the COVID-19 quarantine among affected low-income populations were the significant increased prevalence of anxiety and depression.
- Among affected populations, lower household income, lower education level, lack of psychological support, greater property damage and lower self-perceived health condition were all significantly associated with the increased prevalence of anxiety and depression.
- Staying at home in response to the COVID-19 pandemic negatively impacts the mental health of affected populations and low-income populations.

Background

On March 11, 2020 the World Health Organization (WHO) declared the COVID-19 outbreak a pandemic (WHO, 2020). This date marked a cumulative total of 41 COVID-19 cases in Ontario following the first case which was announced on January 25, 2020 (Ontario Ministry of Health, 2020). To limit and delay the epidemic spread of COVID-19, several public health measures were enacted by the Ontario government. A provincial Declaration of Emergency under the Emergency Management and Civil Protection Act was issued on March 17th. With this came a range of orders to keep people at home including the closure of schools, childcare, restaurants, all non-essential businesses, public spaces, and the prohibition of events and gatherings (Nielson, 2020). Population-level public health measures also included asking everyone to practise physical distancing (previously referred to as social distancing). Physical distancing

means to stay home as much as possible and stay at least two metres away from contacts outside of the home.

Given the current lack of effective therapeutics or vaccines for COVID-19, population-level public health measures such as isolation, physical distancing, and quarantine are the only effective ways to respond to the outbreak (Nussbaumer-Streit et al., 2020; Public Health Agency of Canada [PHAC], 2020). Furthermore, the combination of such public health measures has been shown to reduce COVID-19 transmission, incident cases and mortality (Nussbaumer-Streit et al., 2020). While these measures play a critical role in limiting the spread of COVID-19, they have wide-ranging social and economic impacts and can have negative unintended consequences (PHAC, 2020). Such measures might lead to an increase in overall health burden, particularly for marginalized or vulnerable populations. Academic and non-governmental organizations including the American Psychological Association, the Centre for Mental Health, and the United Nations among others indicate that harms associated with stay-at-home orders or lockdown associated with pandemics may include physical health threats (harms, injuries, medical conditions), mental health harms (suicide risk, substance use, mental illness incidence), food insecurity, and domestic violence (Benfer & Wiley, 2020; American Psychological Association, 2020; Centre for Mental Health, 2020; Lustig & Tommasi, 2020; Flautau et al., 2020; Niles et al., 2020; United Nations, 2020; Asian Development Bank, 2020; Nassif-Pireset et al., 2020; Brooks et al., 2020). Those experiencing low income may be particularly vulnerable to unintended harms of COVID-19 public health measures.

Evidence of the impact of these measures on populations such as those experiencing low income is both limited and emerging. Given the prolonged population-level measures to control and prevent COVID-19, potential harms from stay-home measures are important to consider. To ensure low income populations are not disproportionately burdened, it is important to understand potential harms and related mitigation strategies that could be implemented post-pandemic and as measures tighten during a potential second wave of COVID-19.

The purpose of this literature review is to investigate whether there is evidence of social, physical or mental health harms experienced by community dwelling populations living with low-income as a result of stay-home public health measures to control pandemics. Potential mitigation strategies for identified harms will be presented. The first part of this review includes a rapid review of harms and the second includes a narrative review of potential mitigation strategies.

Objectives

1. To assess the social and health and well-being harms of staying at home during current or past pandemics experienced by community dwelling populations living with low income.
2. To present potential mitigation strategies that address identified harms.

PECO Definition Chart:

Population of Interest	Exposure	Comparison	Outcomes
Low income individuals from the general population with no known exposure who are community dwelling	Voluntary self-isolation or mandatory population level stay-at-home orders that are occurring or have occurred during the current COVID-19 pandemic or that occurred during previous epidemics or acute respiratory tract outbreaks. No restriction on the minimum duration of experiencing stay-at-home orders	Non or pre-pandemic times (a.k.a. normative or baseline outcome data) in a similar population	<ul style="list-style-type: none"> • Domestic violence, physical and emotional abuse or trauma • Physical harms including harm from injury • Worsening of medical conditions • Food insecurity • Mental health illness or mental health decline • Suicide • Substance use (alcohol, legal and illegal drug use, and tobacco)

Methods

Pre-specified eligibility criteria were as follows:

Study design

Systematic reviews, prospective cohort studies, retrospective cohort studies, case-control studies, cross-sectional studies, case series, interrupted time series and modelling studies were included. Emphasis was placed on higher quality study designs. A stepwise approach to study design inclusion was used.

Individual case studies, abstracts and conference proceedings, editorials, dissertations and narrative reviews were excluded from the literature search. A separate grey literature search was conducted to search for mitigation strategies. Methodology for the grey literature search is discussed in the narrative review section.

Population

Low income individuals from the general population with no known exposure to the virus who are community dwelling.

Studies were excluded that specifically examined exposure effects (e.g. effects of interventions unrelated to mitigation of harms), those assessing gambling behaviour, factors associated with compliance of physical distancing measures, the harms of pandemics in general specific to the outcomes of interest without the exposure of “staying home” and studies that were conducted in a specific setting such as educational, hospital, prison, childcare and nursing homes.

Exposure

Voluntary self-isolation or mandatory **population level** stay-at-home orders that occurred or are occurring during the current COVID-19 pandemic or that occurred during previous epidemics or acute respiratory tract outbreaks. No restriction on the minimum duration of experiencing stay-at-home orders.

Comparator(s)

Non or pre-pandemic times (a.k.a. normative or baseline outcome data) in a similar population.

Outcome(s)

- Socially related: domestic violence
 - Physical and emotional abuse or trauma
- Physical harms including harm from injury
 - Reported decline in physical activity, reported or perceived increase in obesity, reported or perceived worsening of medical conditions, increase in reported injuries including falls, self-harm, on-road or off-road injuries
- Food insecurity
- Mental health and substance use related
 - Reported or perceived worsening of mental health (anxiety, depression, stress, suicidal thoughts, suicide attempts, completed suicides, loneliness or increasing symptomology of these conditions)
 - Self-reported decline in mental health, reported new cases of mental health related illness (diagnosed depression, generalized anxiety disorder, PTSD)
 - Substance use (alcohol, legal and illegal drug use, and tobacco)

Search methods for identification of studies

The literature search was developed and conducted on May 19 and 21, 2020 by the Thunder Bay Shared Library Services Partnership (SLSP) Hub Librarian. The search was sent out for comment to Public Health Hub Librarian peers. Please see the search strategy in Appendix A.

Electronic Databases

Ovid MEDLINE® from 1946 to May 19, 2020.

Ovid MEDLINE® (Epub Ahead of Print, In-Process & Other Non-Indexed Citations and Daily Update) from 1946 to May 19, 2020.

SocINDEX with Full Text from 1908 to May 21, 2020

PsycINFO with Full Text from 1967 to May 21, 2020

Other Searches

Studies in press were searched in Ovid MEDLINE(R) Epub Ahead of Print & Ovid MEDLINE(R) In-Process & Other Non-Indexed Citations. Articles in preprint were searched in the medRxiv, bioRxiv and the Social Science Research network databases.

Screening

Title and Abstract Screening

Title and abstract screening of the literature was done independently by three reviewers. The first and second reviewers, JS & KSM, each screened 50% of all three database search results and identified citations that may align with the inclusion criteria. The third reviewer, JM, reviewed 50% of citations to confirm that those identified by JS & KSM for full-text review were aligned with the review criteria. Any disagreements about which titles and abstracts met inclusion criteria were resolved by discussion.

Full Text Review

All titles and abstracts that may have met inclusion criteria were retrieved in full-text. Two reviewers, JS & KSM, each reviewed 50% of the academic research articles selected for full text review. An inclusion/exclusion table lists all articles pulled for full text review (see Appendix B). JM reviewed 25% of the articles selected for inclusion. JM additionally reviewed both JS & KSM's Exclusion table to confirm that citations listed in the Exclusion table did not meet the inclusion criteria. JS, KSM and JM met to discuss any discrepancies for the included articles. Any disagreement about which full-text articles should be excluded were resolved by discussion.

Inclusion of non-English Language Studies

All non-English language studies were excluded.

Data collection and analysis

Data for the literature review was extracted by JS using a template created in Excel. Headings for data extraction included author (year), research design, follow-up schedule, outcome measurement tools, confounder adjustment, sample size, age, sex, participant characteristics, vulnerability definition, country, setting, pandemic type, duration and outcome results. KSM independently reviewed all extracted data contained in Table 1 for completeness and correctness.

Table 1*Data Extraction Chart for Included Studies*

Category	Data Extracted
Author (year)	Lei et al., 2020
Research Design	Cross-sectional study
Follow-up Schedule/Timeline	Study conducted Feb 4-10, 2020
Outcome Measurement Tools	Self-rating anxiety scale (SAS) and the Self-rating depression scale (SDS) Scale: includes no, mild, moderate, severe
Confounder Adjustment	None
Sample Size	1593 Affected group 420 Unaffected group 1173
Age	18+
Sex	F = 61.3% M = 38.7%
Characteristics (i.e. ethnicity)	Chinese
Vulnerability definition	low average household income groups (<1500 and 1500-3000 Yuan per annum) Note: 7 Chinese yuan = \$1 US
Country	Southwestern China
Setting	Community
Pandemic Type	Respiratory - COVID-19
Duration	January 2020 - ongoing

Category	Data Extracted
Outcome Results	<p>Affected group - classified according to: having themselves or their families/colleagues/classmates/neighbors had been quarantined during COVID-19</p> <p>Unaffected group - classified according to: did not themselves or their families/colleagues/classmates/neighbors experience quarantine during COVID-19</p> <p>All Participants Among 1593 participants, the prevalence of anxiety and depression was approximately 8.3% and 14.6% respectively</p> <p>Affected Group The prevalence was 12.9% anxiety and 22.4% depression - significantly higher than the unaffected group</p> <p>Unaffected Group The prevalence was 6.7% anxiety and 11.9% depression</p> <p>Vulnerabilities Lower average household income, lower education level, no psychological support, greater property damage, lower self-perceived health condition were significantly associated with higher scores on the SAS & SDS</p>

Risk of Bias Assessment

Given the time restrictions of this rapid review, only one reviewer (JS) completed a limited quality assessment of the selected study using the [Risk of Bias Instrument for Cross-sectional Surveys of Attitudes and Practices](#) developed by the Clarity Group at McMaster University.

Specifically, the tool assessed the following five domains: representativeness of sample, adequacy of response rate, missing data processes, validity assessment, and use of validated survey instruments (Clarity Group at McMaster University, n.d.). This review did not include a quality appraisal of included studies.

Study authors were not contacted to retrieve missing information from the research manuscript.

Effect Measures

Because of the limited number of studies that met inclusion criteria, no attempt was made to select studies using the same metric to report results.

Results

Description of studies

Results of the search

Published:

The literature search yielded 402 search results from three different databases. After title and abstract screening, 28 citations were retained. The most common reasons for exclusion of papers at the full-text screening stage were the study reported on pandemics in general without the exposure of staying at home, the study did not report on the harms associated with staying at home or was missing the population of low income. One citation met inclusion criteria following full-text screening (See Appendix C: for PRISMA Flow Diagram). This citation Lei et al., 2020 was subsequently included and is listed in the Inclusion/Exclusion Table in Appendix B.

The included study Lei et al., 2020 was based in China. The city of Wuhan, nearby cities and the province of Hubei went into mandatory quarantine on January 23rd. Subsequently regions in Southwestern China including Chongqing City, Sichuan Province, Guizhou Province and Yunnan Province initiated first-level responses to COVID-19 including isolating confirmed cases and quarantining close contacts as of January 24, 2020. This study used a cross-sectional online survey distributed via local chat groups and the sampling strategy used was considered convenience sampling. The survey response rate was 80.2%. This study was rated as having a Moderate risk of bias.

No studies that met inclusion criteria reported on worsening rates of domestic violence, physical abuse, emotional abuse or trauma, physical harms including harm from injury, reported or perceived increase in obesity, reported or perceived worsening of medical conditions, increase in reported injuries including falls, self-harm, on-road or off-road injuries, food insecurity, suicide attempts, completed suicides, loneliness, reported increases in new cases of mental health illness or worsening rates of legal or illegal drug use or tobacco.

Unpublished Preprint:

Twenty-two manuscripts in preprint were found among the medRxiv, bioRxiv and Social Science Research network databases; all of these were reviewed in full-text. After title and abstract review performed by HV no preprint manuscripts met inclusion criteria for the literature review.

Excluded studies

Please see Appendix B for a list of excluded studies.

Risk of bias in included cross-sectional studies

Quality Assessment

Author	Representativeness of Sample	Adequacy of response rate	Missing data with completed questionnaires	Assessment of questionnaire comprehensiveness, clarity, and validity	Established validity of survey instrument
Lei et al (2020)	PY	Y	PN	NR	NR
RoB	Low risk of bias	Low risk of bias	Low risk of bias	High risk of bias	High risk of bias

Legend

Y= (Definitely) yes

PY= Probably Yes

N= (Definitely) no

PN= Probably No

NR= Not reported

Green font = low risk of bias

Red font = high risk of bias

RoB = Risk of Bias Assessment

Effects of interventions/results

Study results for the literature review were organized by outcome of harms related to staying at home during a pandemic. The harms identified by this search included worsening of mental health including anxiety and depression.

Anxiety:

Lei et al., 2020 used the Self-Rating Anxiety Scale (SAS) 4 point scale and found the prevalence of mild anxiety among the affected population was (7.9%, n = 33), moderate anxiety (4.5%, n = 19), and severe anxiety (0.5%, n=2) creating a combined prevalence rate for mild – severe anxiety of 12.9% (n=54) (Zung,1971). These data were compared to a prevalence rate for mild, moderate or severe anxiety (prevalence rate of 6.7%, n=79) combined among populations unaffected by quarantine across Southwestern China from February 4 – 10th, 2020. In the affected group, results of multiple linear regression analyses showed that participants with lower average household income had higher anxiety rating scores ($P = 0.028$). This study was rated as having a Moderate risk of bias.

Depression:

Lei et al., 2020 used the Self-Rating Depression Scale (SDS) 4 point scale and found the prevalence of mild depression among the affected population was (11.2%, n = 47), moderate depression (9.8%, n = 41), and severe depression (1.4%, n = 6) creating a combined prevalence rate for mild – severe depression of 22.4% (n=94) (Zung, 1965). These data were compared to a prevalence rate for mild, moderate or severe depression (prevalence rate of 11.9%, n=130) combined among populations unaffected by quarantine across Southwestern China from February 4 – 10th, 2020. In the affected group results of univariate analysis showed participants with high average household income (>9000 Yuan) had a significantly lower level of depression (mean score = 35.85) than the low average household income groups (<1500 Yuan (mean score = 39.26) and 1500-3000 Yuan (mean score = 38.33).

There was no sub analysis for those with low income for this outcome.

Narrative Review

This section describes the purpose and the findings from the grey literature review. The purpose of this narrative review was to explore and describe public health measures that are recommended for local, provincial and national governments to mitigate the harms to low income populations from staying at home during current or past pandemics. Mitigation related interventions that were found in the database search for the rapid review were included in this review. A grey literature search based on the PECO question was conducted to supplement information gathered from published databases. Please refer to Appendix D for the grey literature search methodology. Mitigation strategies in this review were divided according to target audience as recommended by organizational experts including government, non-government and research organizations.

Summary of findings: mitigation of harms

The majority of the recommendations on how to mitigate the unintended harms of lockdown/stay at home orders focus on the broader systemic issues highlighted by these measures and refer mostly to mitigating financial harms. Out of the ten grey literature publications included in this rapid review, eight spoke to financially-based interventions to mitigate the aforementioned harms resulting from lockdown orders. The systemic issues highlighted in the studies include but are not limited to: existing disparities between populations, existing mitigating policies, and pre-existing health conditions. As a result, high level recommendations that focus on mitigating financial harm are most often cited (Benfer & Wiley, 2020; Lustig & Tommasi, 2020; Flatau et al., 2020; Niles et al., 2020, United Nations, 2020; Asian Development Bank, 2020; Nassif-Pires et al., 2020; Brooks et al., 2020). Below are the suggested strategies, based on target audience, to mitigate the harms specified in this rapid review.

Recommended actions

Domestic Violence and Physical Harm

Federal Level

- Provide immediate rollout or expansion of social assistance to families, preferably through the use of universal child grants which offer a simple and proven tool for shielding children from extreme poverty (United Nations, 2020)

Provincial Level

- Increase data collection on vulnerable populations (United Nations, 2020)
- Conduct urgent securing of food supply chains and local food markets (United Nations, 2020)
- Perform urgent adaptation of standard physical distancing and lockdown strategies in low-income settings, especially in urban areas, refugee settlements and places affected by active conflicts (United Nations, 2020)
- Increase funding to services supporting women and children experiencing family and domestic violence including specialist family violence services, the safe-at-home program and women's refuges (Flautau et al., 2020)

Local Level

- Educate the public about the situation of domestic violence and risk (Lustig & Tommasi, 2020)

Worsening Health Condition

Federal Level

- Expand unemployment insurance to cover part-time employees and gig-economy workers (Nassif-Pires et al., 2020)

Provincial Level

- Develop policies to protect vulnerable populations, proactively enforce safe and healthy homes regulations and ensure access to food and other necessities (Benfer & Wiley, 2020)
- Place a moratorium on evictions and utility shut-off, increase affordable housing and provide practical help such as financial support and tax deferral or elimination (Nassif-Pires et al., 2020; Benfer & Wiley, 2020; Lustig & Tommasi, 2020; Centre for Mental Health, 2020)
- Guarantee access to paid sick leave, healthcare and medications beyond OVID-19 (Nassif-Pires et al., 2020; Lustig & Tommasi, 2020)
- Provide childcare for essential but low-paid workers whose children are now not going to school (Nassif-Pires et al., 2020)

Local Level

- Perform active outreach to those who may not be part of a support network and groups and engage with different communities, especially those whose voices are often not heard such as minority groups, to gain an understanding of their changing needs (Lustig & Tommasi, 2020; Centre for Mental Health, 2020)
- Provide ongoing practical support for those who are dealing with secondary stressors such as substance use (Centre for Mental Health, 2020)

Food Insecurity

Provincial Level

- Ensure government agencies, particularly those distributing unemployment benefits, connect families in need to available resources (Niles et al., 2020)

Local Level

- Ensure providers refer families in need to locally available resources or to United Way, which aggregates these resources locally (Niles et al., 2020)
- Provide school lunches at home for essential but low-paid workers whose children are now not going to school (Nassif-Pires et al., 2020)
- Ensure regional providers deliver immediate food relief to those most affected by lockdown due to COVID-19 (Lustig & Tomassi, 2020; Asian Food Bank, 2020)

Mental Health Decline & Illness

Federal Level

- Provide additional levels of financial support to populations with lower household incomes (below \$40,000 annually) and to those who lose earnings while in quarantine (Brooks et al., 2020)

Provincial Level

- Protect tenants through eviction notice freezes; protect mortgages through payment deferrals; provide immediate additional funding support to homelessness services; expand the eligibility for temporary accommodation, crisis accommodation, rental assistance, income support and social housing for all those not currently eligible (Flautau et al., 2020)
- Quarantine individuals for no longer than required, provide a clear rationale for quarantine, provide information about protocols and ensure sufficient supplies are provided (Brooks et al., 2020)
- Appeal to altruism by reminding the public about the benefits of quarantine to wider society (Brooks et al., 2020)

Local Level

- Encourage mental health practitioners to advocate on behalf of vulnerable and institutionalized individuals to policy makers (American Psychological Association, 2020).

Discussion

Academic Literature: Summary of main findings

Only one study met the inclusion criteria for this review. This study was rated with a Moderate risk of bias due to the nature of the cross-sectional survey design and the convenience sampling used. Results of this review should be used with caution. This study nonetheless reported higher prevalence of anxiety and depression among affected populations who had themselves or their families/colleagues/classmates/neighbours been quarantined. This impact may be attributed to the public health quarantine measures encouraging residents to stay at home during the COVID-19 pandemic.

Sample characteristics:

Risk factors:

Lei et al., 2020 noted that a significant increase in depression occurred among populations who had been exposed to quarantine during COVID-19 and who were from low average household income groups (<1500 vs. 1500-3000 Yuan). Further, Lei et al., 2020 found participants with lower average household income had higher anxiety scores. The prevalence of higher anxiety among affected populations of low income were speculated to be worsened by economic restrictions of the pandemic including inability to deal with financial problems and the inability to estimate how long economic impacts will last.

Location

Lei et al., 2020 noted that the prevalence of anxiety and depression was significantly higher among participants from Chongqing City (mean score of 43.39) than participants from Sichuan Province (35.48), Guizhou Province (35.19), or Yunnan Province (35.33). Notably Chongqing City is closest to the province of Hubei where COVID-19 was first found.

Broader mental health outcomes:

Lei et al., 2020 noted factors associated with significantly higher anxiety and depression scores using univariate analysis. Significantly higher anxiety and depression scores were found among younger age groups (<30 years old) (mean score of 37.08 and 38.37 respectively) compared to an older age group (>50 years old) (mean score of 34.75 and 35.12). Those who were divorced/widowed had significantly more anxiety and depression (mean score of 41.62 and 43.86 respectively) than those who were married/cohabitating (mean score 36.32 and 36.07). Those with “bad” self-perceived health had higher levels of anxiety and depression (mean score 47.14 and 50.36 respectively) than those whose self-perceived health was regular, good, or very good (mean score of 39.61 and 40.78, 35.92 and 36.30, 32.98 and 33.53 respectively).

Those who had not experienced economic loss (0 Yuan) had a significantly lower level of anxiety and depression (mean score 34.64 and 35.31 respectively) than those in other groups.

In general, high levels of anxiety and depression were associated with severe economic loss and low perceived health status.

Grey Literature: Summary of mitigation strategies

The grey literature publications included in this rapid review seemed to overwhelmingly support the need to address underlying systemic issues that create health inequities, most of which are linked to financial disparities. There was less evidence to support the relationship between lockdown measures and physical health threats. More research to understand if there were unintended physical harms due to people being required to stay home would be of interest; especially given the known relationship between people of low SES and higher prevalence of underlying physical health conditions. Brooks et al. (2020) found that when lockdown measures are put in place, information is key: people who are quarantined need to understand the situation. In addition, effective and rapid communication is essential. When possible, the quarantine period should be short and the duration should not be changed unless in extreme circumstances. Most of the adverse effects come from the imposition of a restriction of liberty: voluntary quarantine is associated with less distress and fewer long-term complications. Finally, public health officials should emphasize the altruistic choice of self-isolating (Brooks et al., 2020).

Strengths

A quality control measure which contributed to the strength of this review included that the screening of full-text documents was conducted by two independent reviewers. A second major strength was the comprehensiveness of the literature search across 3 distinct databases which were searched using a search strategy defined and cross-referenced by peer review by Thunder Bay Hub library services. A grey literature search was also conducted.

Limitations

The study selected for review, Lei et al. (2020) was rated as Moderate quality of evidence using a risk of bias assessment. However, the study used a cross-sectional survey which is in general considered low quality evidence (Atkins et al., 2004). Other limitations included self-reported outcomes, lack of targeted sampling and generalizability. Other factors were not considered that may have confounded the outcomes and due to the limited number of studies that met inclusion criteria, no attempt was made to select studies using the same metric to report results.

Populations divided into the “affected” and “unaffected” groups were only roughly divided based on their quarantine situation and a subgroup analysis between different levels of exposure was not completed. Gaps in evidence exist for low income populations and quarantine as an exposure over a measured duration of time. This literature search was completed in a rapid

timeframe and may not account for emerging research on the current pandemic and due to time constraints, a comprehensive quality appraisal of evidence was not completed. Additionally, abstracts and full text articles were reviewed by two independent reviewers but only a portion of studies was reviewed by an independent second reviewer. Due to the nature of the population and perception of mental health in China, generalizability to an Ontario population may be difficult.

Conclusions

The study examined (Lei et al., 2020) identified a negative impact on mental health as a result of public health measures during the COVID-19 pandemic. The quarantine measures have been attributed to increased prevalence of anxiety and depression among those affected (Lei et al., 2020). Research shows mental health effects from quarantine could be extensive in both severity and duration among affected populations (Lei et al., 2020). Although evidence is scarce, strategies to address harms related to quarantine may be warranted. The results of this rapid review have showcased that there is a need for further research into the unintended harms of lockdown (stay at home) measures on the general population that may be disproportionately experienced by low income populations. Lockdown measures put in place to mitigate the direct and immediate harms associated with the COVID-19 pandemic may not have been implemented with equitable consideration of their effects on different populations (Lustig & Tommasi, 2020; Nassif-Pires et al., 2020; United Nations, 2020). Health officials and policy makers must consider the potential harms of population health measures intended to slow and control community transmission and use a health equity approach to inform mitigation strategies for low income populations.

Declarations of Interest

There are no competing interests to declare.

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Appendix A

Academic Literature Search Strategy

Search Strategy:

Because content was limited related to social isolation and financially vulnerable populations, specific outcomes were not searched in the academic literature.

Search

Database(s): Ovid MEDLINE(R) and Epub Ahead of Print, In-Process & Other Non-Indexed Citations and Daily 1946 to May 19, 2020

Search Strategy:

#	Searches	Results
1	("community acquired infect*" or epidemic* or (disease* adj2 outbreak*) or pandemic*).ti,kw,kf. or (epidemic* or pandemic*).ab. /freq=2	69899
2	disease outbreaks/ or epidemics/ or pandemics/	95610
3	Severe Acute Respiratory Syndrome/ or SARS Virus/ or middle east respiratory syndrome coronavirus/ or Coronavirus Infections/ or Influenza A Virus, H1N1 Subtype/ or Influenza, Human/ or Influenza Pandemic, 1918-1919/ or Hemorrhagic Fever, Ebola/ or Ebolavirus/ or ("beta corona virus*" or "beta coronavirus*" or "corona virus*" or coronavirus* or "middle east* respiratory syndrome" or "severe acute respiratory syndrome" or "severe specific contagious pneumonia" or betacoronavirus* or MERS or post-SARS or SARS or Ebola* or ((flu or influenza) adj3 pandemic*) or "Spanish flu" or "Spanish influenza" or "Asian flu" or "Asian influenza" or "hong kong flu" or "hong kong influenza" or "swine flu" or "swine influenza" or H1N1).ti,kw,kf.	84275
4	Coronavirus Infections/ or Sars virus/ or middle east respiratory syndrome coronavirus/	10414
5	("2019 corona virus" or "2019 coronavirus" or "2019 ncov" or "corona virus 19" or "corona virus 2019" or "corona virus 2019" or "corona virus disease 19" or "corona virus disease 2019" or "corona virus epidemic*" or "corona virus outbreak*" or "corona virus pandemic*" or "coronavirus 19" or "coronavirus 2019" or "coronavirus 2019" or "coronavirus disease 19" or "coronavirus disease 2019" or "coronavirus epidemic*" or "coronavirus outbreak*" or "coronavirus pandemic*" or "covid 19" or "covid 2019" or "new corona virus" or "new coronavirus" or "novel corona virus" or "novel coronavirus" or "novel human coronavirus" or "sars coronavirus 2" or "sars cov 2" or "sars cov2" or "sars like coronavirus" or "severe acute respiratory syndrome corona virus 2" or "severe acute respiratory syndrome coronavirus 2" or "severe specific contagious pneumonia" or "wuhan corona virus" or "wuhan coronavirus" or 2019ncov or covid19 or covid2019 or ncov or sarscov2 or "coronavirus response" or "corona virus response").af.	16122
6	((novel or Wuhan or China or Chinese or "seafood market" or "2019" or outbreak* or epidemic* or pandemic*) adj5 (coronavirus* or "corona virus*" or betacoronavirus* or "beta coronavirus*" or "beta corona virus*" or pneumonia* or SARS or "severe acute respiratory syndrome")).af.	13833

#	Searches	Results
7	((coronavirus* or "corona virus*" or betacoronavirus* or "beta coronavirus*" or "beta corona virus*" or SARS or "severe acute respiratory syndrome") adj5 pneumonia*).af.	4053
8	("Coronavirus Infections" or "Betacoronavirus" or Coronavirus*).hw. or (Coronavir* or betacoronavir* or wuhan or "COVID-19" or 2019ncov or ncov2019 or ncov 2019 or 2019 ncov or Covid 19 or SARS CoV 2).ti,ab,kw,kf. or (severe acute respiratory syndrome coronavirus 2 or "COVID-19 vaccine" or "COVID-19 drug treatment" or "spike glycoprotein, COVID-19 virus" or "COVID-19 diagnostic testing" or "COVID-19 serotherapy" or "COVID-19").os,ps,rs,ox,px,rx. or (COVID or COVID 19 or nCoV or 2019nCoV or COVID19 or SARSCoV2 or pandemic* or corona virus* or coronovir* or wuhan or novel CoV or new CoV or nouveau CoV).ti,ab,kw,kf.	55311
9	("Coronavirus Infections" or "Betacoronavir*" or Coronavir*).hw. or (Betacoronavir* or Coronavir* or corona virus* or coronavir* or betacoronavir* or wuhan virus or "Wuhan coronavirus" or "COVID-19" or 2019ncov or ncov2019 or ncov 2019 or 2019 ncov or Covid 19 or covid19 or COVID 19 or novel CoV or new CoV or nouveau CoV or SARS-coronavir* or SARS-CoV or SARS CoV 2 or SARSCoV19 or WN-Cov).ti,kw,kf,ab.	29911
10	("Middle East* Respiratory Syndrome" or MERS or "Severe acute respiratory syndrome*" or SARS or post-SARS).ti,kw,kf.	10790
11	((outbreak* or "respiratory illness*" or "respiratory disease*" or "respiratory symptom*") adj2 (Wuhan or China or chinese)).ti,kf,kw,hw,ab.	601
12	(respiratory adj1 (outbreak* or virus)).ti,kw,kf,hw,ab.	2782
13	or/1-12	211539
14	Psychosocial Deprivation/ or Quarantine/ or Social isolation/ or Patient Isolation/ or (quarantin* or ((social* or self) adj1 isolat*) or (distanc* adj2 (social* or physical*)) or (stay* adj2 home) or "stay at home" or (shelter adj2 place) or "shelter-in-place" or self-quarantine* or (restrict* adj2 movement*) or lockdown* or lock-down* or (restrict* adj2 measure*) or (lock* adj2 down*)).mp.	40428
15	(lockdown* or lock-down* or social distanc* or social* isolat* or (stay* at home adj3 (bylaw* or by-law* or order* or rule* or ordinance*)) or quarantine*).mp.	28145
16	((curtail* or disallow or limit* or no or "not allow*" or prohibit* or scal* back) adj3 (contact* or ((communit* or public* or social*) adj2 (activit* or contact* or event)) or event* or gathering* or get* together* or interact* or meeting*)) or ((curtail* or disallow or limit* or no or "not allow*" or prohibit* or scal* back or scal* down or restrict* or ban or forbid* or forbade* or reduc* or less* or cut* or diminish*) adj3 (contact* or ((communit* or public* or social*) adj2 (activit* or contact* or event)) or event* or gathering* or get* together* or interact* or meeting))).mp.	97845
17	((close or closing or closure? or limit* or lock* down* or lock-down* or shut* down or shutting or shuttered or shutting) adj1 (agenc* or business* or clubs or facilities or gym* or industr* or librar* or parks or playground? or sport? or arena? or restaurant* or bar or bars or nightclub? or service* or shop* or stores or social* service* or school? or daycare? or day care? or retail? or construction? or manufactur* or factory or factories)).mp.	1905
18	(Family/ or Friends/ or Peer Group/ or Social Networking/ or (famil* or friend* or social network* or peer*).ti,kw,kf.) and (patient isolation/ or social isolation/ or ((curtail* or cut* or disallow or diminish* or less* or limit* or no or "not allow*" or prohibit* or reduc* or scal* back or scal* down or restrict* or ban or forbid* or forbade*) adj3 (contact* or get* together* or interact* or meeting* or social* or party or parties or celebrat* or visit* or "in-person" or "face-to-face")).mp.)	3844

#	Searches	Results
19	loneliness/ or ((company or human contact or social* or society) adj2 (depriv* or lack*).ti,kw,kf.	4338
20	or/14-19	144089
21	13 and 20	4718
22	(disease outbreaks/ or epidemics/ or pandemics/) and (lockdown* or lock-down* or social distanc* or ((social* or self) adj1 isolat*) or (distan* adj2 (social* or physical*)) or (stay* adj2 home) or stay* at home or (shelter* adj2 place) or shelter-in-place or self-quarantin* or (restrict* adj2 movement*) or (restrict* adj2 measure*) or quarantine*).ti,kw,kf,hw.	907
23	((lengthy or long term or long-term or prolong*) adj3 (lockdown* or lock-down* or social distanc* or ((social* or self) adj1 isolat*) or (distan* adj2 (social* or physical*)) or (stay* adj2 home) or stay* at home or (shelter* adj2 place) or shelter-in-place or self-quarantin* or (restrict* adj2 movement*) or (restrict* adj2 measure*) or quarantine*).mp.	169
24	((constant* or continu* or drawn out or indefinit* or lasting or long* or permanent* or perpetual* or protracted or undefined or undetermined or unlimited) adj3 (lockdown* or lock-down* or social distanc* or ((social* or self) adj1 isolat*) or (distan* adj2 (social* or physical*)) or (stay* adj2 home) or stay* at home or (shelter* adj2 place) or shelter-in-place or self-quarantin* or (restrict* adj2 movement*) or (restrict* adj2 measure*) or quarantine*).mp.	464
25	Quarantine/ or quarantine.ti.	2632
26	or/22-25	3346
27	21 or 26	6871
28	Unemployment/ or Poverty/ or Poverty Areas/ or Working Poor/ or Vulnerable Populations/ or social class/ or Old Age Assistance/ or Aid to Families with Dependent Children/ or Social Security/	102286
29	socioeconomic factors/ or economic status/ or income/	177743
30	Homeless Youth/ or Homeless Persons/ or "Transients and Migrants"/ or Public Assistance/ or Public Housing/	23926
31	((economic* or financial* or monetar*) adj3 (at risk or at-risk or compromise* or disadvantage* or fragil* or marginal* or unstable or vulnerable or vulnerab*).mp.	4132
32	((employment or income* or job or jobs or financ* or income or salary or wage* or work) adj2 (assist* or insecur* or insufficien* or lack* or precarious* or vulnerab*).ti,kw,kf.	768
33	(under-employ* or underemploy* or unemploy* or underpa* or ((inadequa* or low* or minim* or no or poor* or small or substandard or without or welfare) adj2 (income or pay or paid or remuneration or salar* or wage*)) or jobless or ((lack or precarious or inadequa*) adj2 (employ* or job* or work))).ti,kw,kf,ab.	67575
34	(poverty or moneyless or laid off or layoff* or lay off* or public assistance or social assistance or dole? or impoverish* or (fixed adj2 income*) or (seasonal adj1 work*).ti,kw,kf,ab.	32087
35	((impoverish* or poor or public assistance or welfare*) adj3 (communit* or family or families or group* or household* or neighbourhood* or neighborhood* or population* or teen* or individual* or men or man or women or woman or children or child or people or person or persons or population*).mp.	52523
36	(public assistance or welfare* or ((street* or homeless or inner city or migrant* or transient* or vagrant or underserved or under-hous*) adj3 (group* or population* or	64465

#	Searches	Results
	teen* or individual* or men or man or women or woman or children or child or people or person or persons or population*)).ti,kw,kf,ab.	
37	((transitional or emergency or respite or temporary or community or day or men or men's or women or women's or violence or abuse* or battered) adj3 (shelter* or housing)).ti,kw,kf,ab.	2178
38	(beggar?* or couch surfer* or homeless* or houseless* or rough sleeper* or squatter? or vagabond* or vagrant? or vulnerabl* housed).ti,kw,kf. or (beggar?* or couch surfer* or homeless* or houseless* or rough sleeper* or squatter? or vagabond* or vagrant? or vulnerabl* housed).ab. /freq=2	7592
39	(working poor or gig economy).ti,kw,kf.	75
40	or/28-39	411798
41	27 and 40	289

Database 2 SocIndex

#	Query	Results
S1	TI ("community acquired infect*" or epidemic* or (disease* N2 outbreak*) or pandemic*) OR KW ("community acquired infect*" or epidemic* or (disease* N2 outbreak*) or pandemic*) OR SU ("community acquired infect*" or epidemic* or (disease* N2 outbreak*) or pandemic*)	4,012
S2	AB (epidemic* or pandemic*)	7,134
S3	DE "EPIDEMICS" OR DE "DISEASE clusters"	1,775
S4	DE "INFLUENZA"	394
S5	DE "SARS (Disease)"	272
S6	TI ("beta corona virus**" or "beta coronavirus**" or "corona virus**" or coronavirus* or "middle east* respiratory syndrome" or "severe acute respiratory syndrome" or "severe specific contagious pneumonia" or betacoronavirus* or MERS or post-SARS or SARS or Ebola* or ((flu or influenza) N3 pandemic*) or "Spanish flu" or "Spanish influenza" or "Asian flu" or "Asian influenza" or "hong kong flu" or "hong kong influenza" or "swine flu" or "swine influenza" or H1N1) OR SU ("beta corona virus**" or "beta coronavirus**" or "corona virus**" or coronavirus* or "middle east* respiratory syndrome" or "severe acute respiratory syndrome" or "severe specific contagious pneumonia" or betacoronavirus* or MERS or post-SARS or SARS or Ebola* or ((flu or influenza) N3 pandemic*) or "Spanish flu" or "Spanish influenza" or "Asian flu" or "Asian influenza" or "hong kong flu" or "hong kong influenza" or "swine flu" or "swine influenza" or H1N1) OR KW ("beta corona virus**" or "beta coronavirus**" or "corona virus**" or coronavirus* or "middle east* respiratory syndrome" or "severe acute respiratory syndrome" or "severe specific contagious pneumonia" or betacoronavirus* or MERS or post-SARS or SARS or Ebola* or ((flu or influenza) N3 pandemic*) or "Spanish flu" or "Spanish influenza" or "Asian flu" or "Asian influenza" or "hong kong flu" or "hong kong influenza" or "swine flu" or "swine influenza" or H1N1)	1,128
S7	TX ("2019 corona virus" or "2019 coronavirus" or "2019 ncov" or "corona virus 19" or "corona virus 2019" or "corona virus 2019" or "corona virus disease 19" or "corona virus disease 2019" or "corona virus epidemic*" or "corona virus outbreak*" or "corona virus pandemic*" or "coronavirus 19" or "coronavirus 2019" or "coronavirus 2019" or "coronavirus disease 19" or "coronavirus disease 2019" or "coronavirus epidemic*" or "coronavirus outbreak**" or "coronavirus pandemic**" or "covid 19" or "covid 2019" or "new corona virus" or "new coronavirus" or "novel corona virus" or "novel coronavirus" or "novel human coronavirus" or "sars coronavirus 2" or "sars cov 2" or "sars cov2" or "sars like coronavirus" or "severe acute respiratory syndrome corona virus 2" or "severe acute respiratory syndrome coronavirus 2" or "severe specific contagious pneumonia" or "wuhan corona virus" or "wuhan coronavirus" or 2019ncov or covid19 or covid2019 or ncov or sarscov2 or "coronavirus response" or "corona virus response")	118
S8	TX ((novel or Wuhan or China or Chinese or "seafood market" or "2019" or outbreak* or epidemic* or pandemic*) N5 (coronavirus* or "corona virus**" or betacoronavirus* or "beta coronavirus**" or "beta corona virus**" or pneumonia* or SARS or "severe acute respiratory syndrome"))	1,336
S9	TX ((coronavirus* or "corona virus**" or betacoronavirus* or "beta coronavirus**" or "beta corona virus**" or SARS or "severe acute respiratory syndrome") N5 pneumonia*)	21
S10	KW ("Coronavirus Infections" or "Betacoronavirus" or Coronavirus*) OR SU ("Coronavirus Infections" or "Betacoronavirus" or Coronavirus*)	50
S11	TI (Coronavir* or betacoronavir* or wuhan or "COVID-19" or 2019ncov or ncov2019 or ncov 2019 or 2019 ncov or Covid 19 or SARS CoV 2) OR AB (Coronavir* or betacoronavir* or wuhan or "COVID-19" or 2019ncov or ncov2019 or ncov 2019 or 2019 ncov or Covid 19 or SARS CoV 2) OR SU (Coronavir* or betacoronavir* or wuhan or "COVID-19" or 2019ncov or ncov2019 or ncov 2019 or 2019 ncov or Covid 19 or SARS CoV 2) OR KW (Coronavir* or betacoronavir* or wuhan or "COVID-19" or 2019ncov or ncov2019 or ncov 2019 or 2019 ncov or Covid 19 or SARS CoV 2)	221

#	Query	Results
S12	(severe acute respiratory syndrome coronavirus 2 or "COVID-19 vaccine" or "COVID-19 drug treatment" or "spike glycoprotein, COVID-19 virus" or "COVID-19 diagnostic testing" or "COVID-19 serotherapy" or "COVID-19")	83
S13	TI (COVID or COVID 19 or nCoV or 2019nCoV or COVID19 or SARSCoV2 or pandemic* or corona virus* or coronovir* or wuhan or novel CoV or new CoV or nouveau CoV) OR AB (COVID or COVID 19 or nCoV or 2019nCoV or COVID19 or SARSCoV2 or pandemic* or corona virus* or coronovir* or wuhan or novel CoV or new CoV or nouveau CoV) OR KW (COVID or COVID 19 or nCoV or 2019nCoV or COVID19 or SARSCoV2 or pandemic* or corona virus* or coronovir* or wuhan or novel CoV or new CoV or nouveau CoV) OR SU (COVID or COVID 19 or nCoV or 2019nCoV or COVID19 or SARSCoV2 or pandemic* or corona virus* or coronovir* or wuhan or novel CoV or new CoV or nouveau CoV)	1,437
S14	SU ("Coronavirus Infections" or "Betacoronavir*" or Coronavir*) OR KW ("Coronavirus Infections" or "Betacoronavir*" or Coronavir*)	50
S15	TI (Betacoronavir* or Coronavir* or corona virus* or coronavir* or betacoronavir* or wuhan virus or "Wuhan coronavirus" or "COVID-19" or 2019ncov or ncov2019 or ncov 2019 or 2019 ncov or Covid 19 or covid19 or COVID 19 or novel CoV or new CoV or nouveau CoV or SARS-coronavir* or SARS-CoV or SARS CoV 2 or SARSCoV19 or WN-Cov) OR AB (Betacoronavir* or Coronavir* or corona virus* or coronavir* or betacoronavir* or wuhan virus or "Wuhan coronavirus" or "COVID-19" or 2019ncov or ncov2019 or ncov 2019 or 2019 ncov or Covid 19 or covid19 or COVID 19 or novel CoV or new CoV or nouveau CoV or SARS-coronavir* or SARS-CoV or SARS CoV 2 or SARSCoV19 or WN-Cov) OR KW (Betacoronavir* or Coronavir* or corona virus* or coronavir* or betacoronavir* or wuhan virus or "Wuhan coronavirus" or "COVID-19" or 2019ncov or ncov2019 or ncov 2019 or 2019 ncov or Covid 19 or covid19 or COVID 19 or novel CoV or new CoV or nouveau CoV or SARS-coronavir* or SARS-CoV or SARS CoV 2 or SARSCoV19 or WN-Cov) OR SU (Betacoronavir* or Coronavir* or corona virus* or coronavir* or betacoronavir* or wuhan virus or "Wuhan coronavirus" or "COVID-19" or 2019ncov or ncov2019 or ncov 2019 or 2019 ncov or Covid 19 or covid19 or COVID 19 or novel CoV or new CoV or nouveau CoV or SARS-coronavir* or SARS-CoV or SARS CoV 2 or SARSCoV19 or WN-Cov)	140
S16	TI ("Middle East* Respiratory Syndrome" or MERS or "Severe acute respiratory syndrome*" or SARS or post-SARS) OR SU ("Middle East* Respiratory Syndrome" or MERS or "Severe acute respiratory syndrome*" or SARS or post-SARS) OR KW ("Middle East* Respiratory Syndrome" or MERS or "Severe acute respiratory syndrome*" or SARS or post-SARS)	593
S17	TI ((outbreak* or "respiratory illness*" or "respiratory disease*" or "respiratory symptom**") N2 (Wuhan or China or chinese)) OR AB ((outbreak* or "respiratory illness*" or "respiratory disease*" or "respiratory symptom**") N2 (Wuhan or China or chinese)) OR SU ((outbreak* or "respiratory illness*" or "respiratory disease*" or "respiratory symptom**") N2 (Wuhan or China or chinese)) OR KW ((outbreak* or "respiratory illness*" or "respiratory disease*" or "respiratory symptom**") N2 (Wuhan or China or chinese))	15
S18	TI (respiratory N1 (outbreak* or virus)) OR AB (respiratory N1 (outbreak* or virus)) OR SU (respiratory N1 (outbreak* or virus)) OR KW (respiratory N1 (outbreak* or virus))	65
S19	S1 OR S2 OR S3 OR S4 OR S5 OR S6 OR S7 OR S8 OR S9 OR S10 OR S11 OR S12 OR S13 OR S14 OR S15 OR S16 OR S17 OR S18	10,500
S20	space space space	0
S21	space space space	0
S22	space space space	0
S23	((DE "SOCIAL isolation") OR (DE "DEPRIVATION (Psychology)")) OR (DE "TOUCH deprivation") OR (DE "SOLITUDE")	4,403
S24	(quarantin* or ((social* or self) N1 isolat*) or (distanc* N2 (social* or physical*)) or (stay* N2 home) or "stay at home" or (shelter N2 place) or "shelter-in-place" or self-quarantine* or (restrict* N2 movement*) or lockdown* or lock-down* or (restrict* N2 measure*) or (lock* N2 down*))	9,543
S25	(lockdown* or lock-down* or social distanc* or social* isolat* or (stay* at home N3 (bylaw* or by-law* or order* or rule* or ordinance*)) or quarantine*)	7,390

#	Query	Results
S26	((curtail* or disallow or limit* or no or "not allow*" or prohibit* or scal* back) N3 (contact* or ((communit* or public* or social*) N2 (activit* or contact* or event)) or event* or gathering* or get* together* or interact* or meeting*)) or ((curtail* or disallow or limit* or no or "not allow*" or prohibit* or scal* back or scal* down or restrict* or ban or forbid* or forbade* or reduc* or less* or cut* or diminish*) N3 (contact* or ((communit* or public* or social*) N2 (activit* or contact* or event)) or event* or gathering* or get* together* or interact* or meeting*)))	6,440
S27	((close or closing or closure# or limit* or lock* down* or lock-down* or shut* down or shutting or shuttered or shuttering) N1 (agenc* or business* or clubs or facilities or gym* or industr* or librar* or parks or playground# or sport# or arena# or restaurant* or bar or bars or nightclub# or service* or shop* or stores or social* service* or school# or daycare# or day care# or retail# or construction# or manufactur* or factory or factories))	2,686
S28	((DE "FAMILIES" OR DE "AUNTS" OR DE "COUSINS" OR DE "EXTENDED families" OR DE "GRANDPARENT & child" OR DE "NEPHEWS" OR DE "NIECES" OR DE "UNCLES" OR DE "PRIMARY groups (Social groups)") OR (DE "FRIENDSHIP" OR DE "INTERPERSONAL relations" OR DE "NEIGHBORLINESS" OR DE "PEER relations") OR (DE "PEERS" OR DE "SOCIAL groups") OR TI (famil* or friend* or social network* or peer*) OR SU (famil* or friend* or social network* or peer*) OR KW (famil* or friend* or social network* or peer*) AND ((DE "SOCIAL isolation") OR (DE "DEPRIVATION (Psychology)") OR (DE "TOUCH deprivation") OR ((curtail* or cut* or disallow or diminish* or less* or limit* or no or "not allow*" or prohibit* or reduc* or scal* back or scal* down or restrict* or ban or forbid* or forbade*) N3 (contact* or get* together* or interact* or meeting* or social* or party or parties or celebrat* or visit* or "in-person" or "face-to-face"))))	5,153
S29	(DE "LONELINESS") OR TI ((company or human contact or social* or society) N2 (depriv* or lack*)) OR SU ((company or human contact or social* or society) N2 (depriv* or lack*)) OR KW ((company or human contact or social* or society) N2 (depriv* or lack*))	1,780
S30	space space space	0
S31	space space space	0
S32	S23 OR S24 OR S25 OR S26 OR S27 OR S28 OR S29	23,220
S33	S19 AND S32	312
S34	(DE "EPIDEMICS" OR DE "DISEASE clusters") AND (TI (lockdown* or lock-down* or social distanc* or ((social* or self) N1 isolat*)) or (distan* N2 (social* or physical*)) or (stay* N2 home) or stay* at home or (shelter* N2 place) or shelter-in-place or self-quarantin* or (restrict* N2 movement*) or (restrict* N2 measure*) or quarantine*) OR KW (lockdown* or lock-down* or social distanc* or ((social* or self) N1 isolat*)) or (distan* N2 (social* or physical*)) or (stay* N2 home) or stay* at home or (shelter* N2 place) or shelter-in-place or self-quarantin* or (restrict* N2 movement*) or (restrict* N2 measure*) or (quarantine*) OR SU (lockdown* or lock-down* or social distanc* or ((social* or self) N1 isolat*)) or (distan* N2 (social* or physical*)) or (stay* N2 home) or stay* at home or (shelter* N2 place) or shelter-in-place or self-quarantin* or (restrict* N2 movement*) or (restrict* N2 measure*) or (quarantine*))	35
S35	((lengthy or long term or long-term or prolong*) N3 (lockdown* or lock-down* or social distanc* or ((social* or self) N1 isolat*)) or (distan* N2 (social* or physical*)) or (stay* N2 home) or stay* at home or (shelter* N2 place) or shelter-in-place or self-quarantin* or (restrict* N2 movement*) or (restrict* N2 measure*) or (quarantine*))	21
S36	((constant* or continu* or drawn out or indefinit* or lasting or long* or permanent* or perpetual* or protracted or undefined or undetermined or unlimited) N3 (lockdown* or lock-down* or social distanc* or ((social* or self) N1 isolat*)) or (distan* N2 (social* or physical*)) or (stay* N2 home) or stay* at home or (shelter* N2 place) or shelter-in-place or self-quarantin* or (restrict* N2 movement*) or (restrict* N2 measure*) or (quarantine*))	148
S37	TI quarantine	68
S38	S34 OR S35 OR S36 OR S37	253
S39	S33 OR S38	507

#	Query	Results
S40	(DE "UNEMPLOYMENT" OR DE "FRICTIONAL unemployment" OR DE "HIDDEN unemployment" OR DE "LONG-term unemployment" OR DE "PLANT shutdowns" OR DE "REGIONAL disparities in unemployment" OR DE "RURAL unemployment" OR DE "SEASONAL unemployment" OR DE "STRUCTURAL unemployment" OR DE "TECHNOLOGICAL unemployment" OR DE "UNEMPLOYED" OR DE "UNEMPLOYMENT & health" OR DE "UNEMPLOYMENT & politics") OR (DE "DISMISSAL of employees" OR DE "DISPLACED workers" OR DE "DOWNSIZING of organizations" OR DE "ECONOMIC indicators" OR DE "UNDEREMPLOYMENT")	17,158
S41	(DE "POVERTY" OR DE "ABSOLUTE poverty" OR DE "CULTURE of poverty" OR DE "CYCLE of poverty" OR DE "HOMELESSNESS" OR DE "IMPOVERISHMENT" OR DE "POVERTY rate") OR (DE "DOWNWARD mobility (Social sciences)" OR DE "INCOME distribution" OR DE "POOR people" OR DE "POVERTY -- Demographic aspects" OR DE "POVERTY statistics" OR DE "RELATIVE poverty" OR DE "SUBSISTENCE economy")	27,503
S42	DE "WORKING poor" OR DE "WORKING class" OR DE "EMPLOYMENT of poor people"	4,408
S43	DE "SOCIAL classes" OR DE "SOCIAL status" OR DE "PEASANTS" OR DE "UNDERCLASS" OR DE "CLASS differences" OR DE "CLASS identity" OR DE "CLASS relations" OR DE "CLASS society" OR DE "CLASSISM" OR DE "SOCIAL background" OR DE "SOCIAL stratification"	32,798
S44	((DE "SOCIAL security" OR DE "PENSIONS" OR DE "INCOME maintenance programs" OR DE "RETIREMENT") OR (DE "REGIONAL disparities in income")) OR (DE "FAMILY allowances")	12,894
S45	(DE "SOCIOECONOMIC factors" OR DE "SOCIAL factors" OR DE "INCOME gap") OR (DE "ECONOMIC status" OR DE "SOCIAL status" OR DE "SOCIOECONOMIC status")	29,177
S46	(DE "INCOME" OR DE "WEALTH" OR DE "INCOME redistribution") OR (DE "LOW-income housing" OR DE "LOW-income single mothers" OR DE "LOW-income parents" OR DE "LOW-income mothers" OR DE "ELDERLY poor" OR DE "POOR communities" OR DE "INCLUSIONARY housing programs" OR DE "SOCIOECONOMICALLY disadvantaged students" OR DE "FOOD stamps")	15,503
S47	((DE "HOMELESS shelters" OR DE "EMERGENCY housing" OR DE "HOMELESS persons" OR DE "HOMELESSNESS" OR DE "WOMEN'S shelters" OR DE "YOUTH shelters") OR (DE "PUBLIC housing")) OR (DE "PUBLIC welfare" OR DE "CHILD welfare" OR DE "EMPLOYMENT of welfare recipients" OR DE "PUBLIC welfare policy" OR DE "WELFARE dependency" OR DE "WELFARE economics" OR DE "WELFARE recipients") OR (DE "MIGRANT agricultural workers")	42,453
S48	((economic* or financial* or monetar*) N3 (at risk or at-risk or compromise* or disadvantage* or fragil* or marginal* or unstable or vulnerable or vulnerab*))	8,416
S49	TI ((employment or income* or job or jobs or financ* or income or salary or wage* or work) N2 (assist* or insecur* or insufficien* or lack* or precarious* or vulnerab*)) OR SU ((employment or income* or job or jobs or financ* or income or salary or wage* or work) N2 (assist* or insecur* or insufficien* or lack* or precarious* or vulnerab*)) OR KW ((employment or income* or job or jobs or financ* or income or salary or wage* or work) N2 (assist* or insecur* or insufficien* or lack* or precarious* or vulnerab*))	1,526
S50	TI (under-employ* or underemploy* or unemploy* or underpa* or ((inadequa* or low* or minim* or no or poor* or small or substandard or without or welfare) N2 (income or pay or paid or remuneration or salar* or wage*)) or jobless or ((lack or precarious or inadequa*) N2 (employ* or job* or work))) OR AB (under-employ* or underemploy* or unemploy* or underpa* or ((inadequa* or low* or minim* or no or poor* or small or substandard or without or welfare) N2 (income or pay or paid or remuneration or salar* or wage*)) or jobless or ((lack or precarious or inadequa*) N2 (employ* or job* or work))) OR SU (under-employ* or underemploy* or unemploy* or underpa* or ((inadequa* or low* or minim* or no or poor* or small or substandard or without or welfare) N2 (income or pay or paid or remuneration or salar* or wage*)) or jobless or ((lack or precarious or inadequa*) N2 (employ* or job* or work))) OR KW (under-employ* or underemploy* or unemploy* or underpa* or ((inadequa* or low* or minim* or no or poor* or small or substandard or without or welfare) N2 (income or pay or paid or remuneration or salar* or wage*)) or jobless or ((lack or precarious or inadequa*) N2 (employ* or job* or work)))	56,913

#	Query	Results
	paid or remuneration or salar* or wage*) or jobless or ((lack or precarious or inadequa*) N2 (employ* or job* or work)))	
S51	TI (poverty or moneyless or laid off or layoff* or lay off* or public assistance or social assistance or dole# or impoverish* or (fixed N2 income*) or (seasonal N1 work*)) OR AB (poverty or moneyless or laid off or layoff* or lay off* or public assistance or social assistance or dole# or impoverish* or (fixed N2 income*) or (seasonal N1 work*)) OR SU (poverty or moneyless or laid off or layoff* or lay off* or public assistance or social assistance or dole# or impoverish* or (fixed N2 income*) or (seasonal N1 work*)) OR KW (poverty or moneyless or laid off or layoff* or lay off* or public assistance or social assistance or dole# or impoverish* or (fixed N2 income*) or (seasonal N1 work*))	45,364
S52	((impoverish* or poor or public assistance or welfare*) N3 (communit* or family or families or group* or household* or neighbourhood* or neighborhood* or population* or teen* or individual* or men or man or women or woman or children or child or people or person or persons or population*))	46,894
S53	TI (public assistance or welfare* or ((street* or homeless or inner city or migrant* or transient* or vagrant or underserved or under-hous*) N3 (group* or population* or teen* or individual* or men or man or women or woman or children or child or people or person or persons or population*))) OR AB (public assistance or welfare* or ((street* or homeless or inner city or migrant* or transient* or vagrant or underserved or under-hous*) N3 (group* or population* or teen* or individual* or men or man or women or woman or children or child or people or person or persons or population*))) OR KW (public assistance or welfare* or ((street* or homeless or inner city or migrant* or transient* or vagrant or underserved or under-hous*) N3 (group* or population* or teen* or individual* or men or man or women or woman or children or child or people or person or persons or population*))) OR SU (public assistance or welfare* or ((street* or homeless or inner city or migrant* or transient* or vagrant or underserved or under-hous*) N3 (group* or population* or teen* or individual* or men or man or women or woman or children or child or people or person or persons or population*)))	91,389
S54	TI ((transitional or emergency or respite or temporary or community or day or men or men's or women or women's or violence or abuse* or battered) N3 (shelter* or housing)) OR AB ((transitional or emergency or respite or temporary or community or day or men or men's or women or women's or violence or abuse* or battered) N3 (shelter* or housing)) OR KW ((transitional or emergency or respite or temporary or community or day or men or men's or women or women's or violence or abuse* or battered) N3 (shelter* or housing)) OR SU ((transitional or emergency or respite or temporary or community or day or men or men's or women or women's or violence or abuse* or battered) N3 (shelter* or housing))	3,991
S55	TI (beggar#* or couch surfer* or homeless* or houseless* or rough sleeper* or squatter# or vagabond* or vagrant# or vulnerabl* housed) OR AB (beggar#* or couch surfer* or homeless* or houseless* or rough sleeper* or squatter# or vagabond* or vagrant# or vulnerabl* housed) OR SU (beggar#* or couch surfer* or homeless* or houseless* or rough sleeper* or squatter# or vagabond* or vagrant# or vulnerabl* housed) OR KW (beggar#* or couch surfer* or homeless* or houseless* or rough sleeper* or squatter# or vagabond* or vagrant# or vulnerabl* housed)	10,019
S56	TI (working poor or gig economy) OR SU (working poor or gig economy) OR KW (working poor or gig economy)	425
S57	space space space	0
S58	space space space	0
S59	S40 OR S41 OR S42 OR S43 OR S44 OR S45 OR S46 OR S47 OR S48 OR S49 OR S50 OR S51 OR S52 OR S53 OR S54 OR S55 OR S56	258,736
S60	S39 AND S59	67

PsycINFO

#	Searches	Results
1	("community acquired infect*" or epidemic* or (disease* adj2 outbreak*) or pandemic*).ti,id. or (epidemic* or pandemic*).ab. /freq=2	5460
2	pandemics/ or epidemics/	3409
3	influenza/ or swine influenza/	1399
4	("beta corona virus**" or "beta coronavirus**" or "corona virus**" or coronavirus* or "middle east* respiratory syndrome" or "severe acute respiratory syndrome" or "severe specific contagious pneumonia" or betacoronavirus* or MERS or post-SARS or SARS or Ebola* or ((flu or influenza) adj3 pandemic*) or "Spanish flu" or "Spanish influenza" or "Asian flu" or "Asian influenza" or "hong kong flu" or "hong kong influenza" or "swine flu" or "swine influenza" or H1N1).ti,id.	1156
5	("2019 corona virus" or "2019 coronavirus" or "2019 ncov" or "corona virus 19" or "corona virus 2019" or "corona virus 2019" or "corona virus disease 19" or "corona virus disease 2019" or "corona virus epidemic**" or "corona virus outbreak**" or "corona virus pandemic**" or "coronavirus 19" or "coronavirus 2019" or "coronavirus 2019" or "coronavirus disease 19" or "coronavirus disease 2019" or "coronavirus epidemic**" or "coronavirus outbreak**" or "coronavirus pandemic**" or "covid 19" or "covid 2019" or "new corona virus" or "new coronavirus" or "novel corona virus" or "novel coronavirus" or "novel human coronavirus" or "sars coronavirus 2" or "sars cov 2" or "sars cov2" or "sars like coronavirus" or "severe acute respiratory syndrome corona virus 2" or "severe acute respiratory syndrome coronavirus 2" or "severe specific contagious pneumonia" or "wuhan corona virus" or "wuhan coronavirus" or 2019ncov or covid19 or covid2019 or ncov or sarscov2 or "coronavirus response" or "corona virus response").af.	157
6	((novel or Wuhan or China or Chinese or "seafood market" or "2019" or outbreak* or epidemic* or pandemic*) adj5 (coronavirus* or "corona virus**" or betacoronavirus* or "beta coronavirus**" or "beta corona virus**" or pneumonia* or SARS or "severe acute respiratory syndrome")).af.	1186
7	((coronavirus* or "corona virus**" or betacoronavirus* or "beta coronavirus**" or "beta corona virus**" or SARS or "severe acute respiratory syndrome") adj5 pneumonia*).af.	56
8	("Coronavirus Infections" or "Betacoronavirus" or Coronavirus*).hw. or (Coronavir* or betacoronavir* or wuhan or "COVID-19" or 2019ncov or ncov2019 or ncov 2019 or 2019 ncov or Covid 19 or SARS CoV 2).ti,ab,id. or (severe acute respiratory syndrome coronavirus 2 or "COVID-19 vaccine" or "COVID-19 drug treatment" or "spike glycoprotein, COVID-19 virus" or "COVID-19 diagnostic testing" or "COVID-19 serotherapy" or "COVID-19").af. or (COVID or COVID 19 or nCoV or 2019nCoV or COVID19 or SARSCoV2 or pandemic* or corona virus* or coronovir* or wuhan or novel CoV or new CoV or nouveau CoV or SARS-caronavir* or SARS-CoV or SARS CoV 2 or SARSCoV19 or WN-Cov).ti,ab,id.	2186
9	("Coronavirus Infections" or "Betacoronavir*" or Coronavir*).hw. or (Betacoronavir* or Coronavir* or corona virus* or coronavir* or betacoronavir* or wuhan virus or "Wuhan coronavirus" or "COVID-19" or 2019ncov or ncov2019 or ncov 2019 or 2019 ncov or Covid 19 or covid19 or COVID 19 or novel CoV or new CoV or nouveau CoV or SARS-caronavir* or SARS-CoV or SARS CoV 2 or SARSCoV19 or WN-Cov).ti,ab,id.	182
10	("Coronavirus Infections" or "Betacoronavir*" or Coronavir*).hw. or (Betacoronavir* or Coronavir* or corona virus* or coronavir* or betacoronavir* or wuhan virus or "Wuhan coronavirus" or "COVID-19" or 2019ncov or ncov2019 or ncov 2019 or 2019 ncov or Covid 19 or covid19 or COVID 19 or novel CoV or new CoV or nouveau CoV or SARS-caronavir* or SARS-CoV or SARS CoV 2 or SARSCoV19 or WN-Cov).ti,ab,id.	182
11	("Middle East* Respiratory Syndrome" or MERS or "Severe acute respiratory syndrome**" or SARS or post-SARS).ti,id.	313
12	((outbreak* or "respiratory illness**" or "respiratory disease**" or "respiratory symptom**") adj2 (Wuhan or China or chinese)).ti,id,hw,ab.	11

#	Searches	Results
13	(respiratory adj1 (outbreak* or virus)).ti,id,hw,ab.	23
14	or/1-13	9144
15	social deprivation/ or stimulus deprivation/	1024
16	social isolation/	7045
17	patient seclusion/	501
18	(quarantin* or ((social* or self) adj1 isolat*) or (distanc* adj2 (social* or physical*)) or (stay* adj2 home) or "stay at home" or (shelter adj2 place) or "shelter-in-place" or self-quarantine* or (restrict* adj2 movement*) or lockdown* or lock-down* or (restrict* adj2 measure*) or (lock* adj2 down*)).mp.	18003
19	(lockdown* or lock-down* or social distanc* or social* isolat* or (stay* at home adj3 (bylaw* or by-law* or order* or rule* or ordinance*))) or quarantine*.mp.	19574
20	((curtail* or disallow or limit* or no or "not allow*" or prohibit* or scal* back) adj3 (contact* or ((communit* or public* or social*) adj2 (activit* or contact* or event)) or event* or gathering* or get* together* or interact* or meeting*)) or ((curtail* or disallow or limit* or no or "not allow*" or prohibit* or scal* back or scal* down or restrict* or ban or forbid* or forbade* or reduc* or less* or cut* or diminish*) adj3 (contact* or ((communit* or public* or social*) adj2 (activit* or contact* or event)) or event* or gathering* or get* together* or interact* or meeting*)).mp.	20709
21	((close or closing or closure? or limit* or lock* down* or lock-down* or shut* down or shutting or shuttered or shuttering) adj1 (agenc* or business* or clubs or facilities or gym* or industr* or librar* or parks or playground? or sport? or arena? or restaurant* or bar or bars or nightclub? or service* or shop* or stores or social* service* or school? or daycare? or day care? or retail? or construction? or manufactur* or factory or factories)).mp.	920
22	(family members/ or cousins/ or daughters/ or grandchildren/ or grandparents/ or inlaws/ or parents/ or siblings/ or sons/ or friendship/ or peer relations/ or peers/ or social networks/ or interpersonal interaction/ or social interaction/ or family/ or extended family/ or family relations/ or family structure/ or (famil* or friend* or social network* or peer*).ti,id.) and (social isolation/ or patient seclusion/ or ((curtail* or cut* or disallow or diminish* or less* or limit* or no or "not allow*" or prohibit* or reduc* or scal* back or scal* down or restrict* or ban or forbid* or forbade*) adj3 (contact* or get* together* or interact* or meeting* or social* or party or parties or celebrat* or visit* or "in-person" or "face-to-face")).mp.)	6316
23	loneliness/	4512
24	((company or human contact or social* or society) adj2 (depriv* or lack*)).ti,id.	636
25	or/15-24	51504
26	14 and "26".mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh]	129
27	(epidemics/ or pandemics/) and (lockdown* or lock-down* or social distanc* or ((social* or self) adj1 isolat*) or (distan* adj2 (social* or physical*)) or (stay* adj2 home) or stay* at home or (shelter* adj2 place) or shelter-in-place or self-quarantin* or (restrict* adj2 movement*) or (restrict* adj2 measure*) or quarantine*).ti,ab,hw.	74
28	((lengthy or long term or long-term or prolong*) adj3 (lockdown* or lock-down* or social distanc* or ((social* or self) adj1 isolat*) or (distan* adj2 (social* or physical*)) or (stay* adj2 home) or stay* at home or (shelter* adj2 place) or shelter-in-place or self-quarantin* or (restrict* adj2 movement*) or (restrict* adj2 measure*) or quarantine*).mp.	92
29	((constant* or continu* or drawn out or indefinit* or lasting or long* or permanent* or perpetual* or protracted or undefined or undetermined or unlimited) adj3 (lockdown* or lock-down* or social distanc* or ((social* or self) adj1 isolat*) or (distan* adj2 (social* or physical*)) or (stay* adj2 home) or stay* at home or (shelter* adj2 place) or shelter-in-place or self-quarantin* or (restrict* adj2 movement*) or (restrict* adj2 measure*) or quarantine*).mp.	291
30	quarantine.ti,id.	50
31	or/27-30	454
32	26 or 31	583

#	Searches	Results
33	unemployment/	4191
34	poverty/ or disadvantaged/ or homeless/ or lower income level/ or socioeconomic status/	55366
35	homeless/ or homeless mentally ill/	7492
36	social deprivation/	794
37	poverty areas/ or ghettos/	794
38	socioeconomic status/ or family socioeconomic level/ or lower class/ or economic security/	29823
39	at risk populations/	37566
40	social security/	991
41	"income (economic)"/ or financial strain/	5064
42	"welfare services (government)"/ or community welfare services/	4469
43	((economic* or financial* or monetar*) adj3 (at risk or at-risk or compromise* or disadvantage* or fragil* or marginal* or unstable or vulnerable or vulnerab*)).mp.	4520
44	((employment or income* or job or jobs or financ* or income or salary or wage* or work) adj2 (assist* or insecur* or insufficien* or lack* or precarious* or vulnerab*)).ti,id.	1178
45	(under-employ* or underemploy* or unemploy* or underpa* or ((inadequa* or low* or minim* or no or poor* or small or substandard or without or welfare) adj2 (income or pay or paid or remuneration or salar* or wage*)) or jobless or ((lack or precarious or inadequa*) adj2 (employ* or job* or work))).ti,id,ab.	43493
46	(poverty or moneyless or laid off or layoff* or lay off* or public assistance or social assistance or dole? or impoverish* or (fixed adj2 income*) or (seasonal adj1 work*)).ti,id,ab.	27766
47	((impoverish* or poor or public assistance or welfare*) adj3 (communit* or family or families or group* or household* or neighbourhood* or neighborhood* or population* or teen* or individual* or men or man or women or woman or children or child or people or person or persons or population*)).mp.	25962
48	(public assistance or welfare* or ((street* or homeless or inner city or migrant* or transient* or vagrant or underserved or under-hous*) adj3 (group* or population* or teen* or individual* or men or man or women or woman or children or child or people or person or persons or population*))).ti,id,ab.	41475
49	((transitional or emergency or respite or temporary or community or day or men or men's or women or women's or violence or abuse* or battered) adj3 (shelter* or housing)).ti,id,ab.	2881
50	(beggar?* or couch surfer* or homeless* or houseless* or rough sleeper* or squatter? or vagabond* or vagrant? or vulnerabl* housed).ti,id. or (beggar?* or couch surfer* or homeless* or houseless* or rough sleeper* or squatter? or vagabond* or vagrant? or vulnerabl* housed).ab. /freq=2	7998
51	(working poor or gig economy).ti,id.	92
52	or/33-51	191889
53	32 and 52	46

Appendix B

List of Included and Excluded Studies

Included Studies

	Author (date)	Reference	Inclusion Reason
1	Brooks, S. K., et al. (2020). *	Brooks, S. K., et al. (2020). "The psychological impact of quarantine and how to reduce it: Rapid review of the evidence." <i>The Lancet</i> 395 (10227): 912-920.	Exposure, population of interest Outcomes of interest Review of evidence.
2	Douglas, M., et al. (2020).	Douglas, M., et al. (2020). "Mitigating the wider health effects of covid-19 pandemic response." <i>BMJ (Clinical research ed.)</i> 369 : m1557.	Rapid scoping, Population of interest, addresses outcomes of interest, actions to mitigate
3	Ghosh, A., et al. (2020).	Ghosh, A., et al. (2020). "Telemedicine for diabetes care in India during COVID19 pandemic and national lockdown period: Guidelines for physicians." <i>Diabetes & metabolic syndrome</i> 14 (4): 273-276.	Actions to mitigate poor glycaemic control - during lockdown in low income country.
4	Lei, L., et al. (2020). *	Lei, L., et al. (2020). "Comparison of Prevalence and Associated Factors of Anxiety and Depression Among People Affected by versus People Unaffected by Quarantine During the COVID-19 Epidemic in Southwestern China." <i>Medical science monitor: international medical journal of experimental and clinical research</i> 26 : e924609.	Matches population, exposure, outcome, study design.

Excluded Studies

	Author (date)	Reference	Inclusion Reason
1	Basu, S. (2020).	Basu, S. (2020). "Non-communicable disease management in vulnerable patients during Covid-19." <i>Indian journal of medical ethics</i> V (2): 103-105.	Difficult to differentiate the exposure of interest of lockdown from closure of outpatient care on impact of NCD for low SES pts. Narrative review suggests actions to mitigate.
2	Basurto-Davila, R., et al. (2013).	Basurto-Davila, R., et al. (2013). "Household economic impact and attitudes toward school closures in two cities in Argentina during the 2009 influenza A (H1N1) pandemic." <i>Influenza and other respiratory viruses</i> 7 (6): 1308-1315.	Did not look at outcomes of interest. Looked at income loss (school closure as the stay at home- compared SES cities).
3	Centers for Disease Control and, P. (2009).	Centers for Disease Control and, P. (2009). "Impact of seasonal influenza-related school closures on families - Southeastern Kentucky, February 2008." <i>MMWR. Morbidity and mortality weekly report</i> 58 (50): 1405-1409.	School closure - comparator cities SES, not addressing outcomes.
4	Corburn, J., et al. (2020).	Corburn, J., et al. (2020). "Slum Health: Arresting COVID-19 and Improving Well-Being in Urban Informal Settlements." <i>Journal of urban health : bulletin of the New York Academy of Medicine</i> .	Does not address outcomes.
5	Douglas, P. K., et al. (2009).	Douglas, P. K., et al. (2009). "Preparing for pandemic influenza and its aftermath: Mental health issues considered." <i>International Journal of Emergency Mental Health</i> 11 (3): 137-144.	Not the target population.
6	Epson, E. E., et al. (2015).	Epson, E. E., et al. (2015). "Evaluation of an unplanned school closure in a Colorado school district: implications for pandemic influenza preparedness." <i>Disaster medicine and public health preparedness</i> 9 (1): 4-8.	Social and economic effects, not population of interest, school closures.
7	Gift, T. L., et al. (2010).	Gift, T. L., et al. (2010). "Household effects of school closure during	Population of interest possibly, not really outcome of interest

	Author (date)	Reference	Inclusion Reason
		pandemic (H1N1) 2009, Pennsylvania, USA." <i>Emerging infectious diseases</i> 16 (8): 1315-1317.	(looked at social disruption, missed work)
8	Fenichel, E. P. (2013).	Fenichel, E. P. (2013). "Economic considerations for social distancing and behavioral based policies during an epidemic." <i>Journal of health economics</i> 32 (2): 440-451	Does not address exposure
9	Hutchins, S. S., et al. (2009).	Hutchins, S. S., et al. (2009). "Protection of racial/ethnic minority populations during an influenza pandemic." <i>American journal of public health</i> 99 Suppl 2 : S261-270.	Does not address exposure or outcomes of interest
10	Kavanagh, A. M., et al. (2012).	Kavanagh, A. M., et al. (2012). "Leave entitlements, time off work and the household financial impacts of quarantine compliance during an H1N1 outbreak." <i>BMC infectious diseases</i> 12 : 311.	Does not address exposure or outcomes of interest
11	Mesa Vieira, C., et al. (2020)	Mesa Vieira, C., et al. (2020). "COVID-19: The forgotten priorities of the pandemic." <i>Maturitas</i> 136 : 38-41.	Does not match exposure criteria - no discussion of harms as a result of staying home
12	Musto, D. F. (1986)	Musto, D. F. (1986). "Quarantine and the problem of AIDS." <i>The Milbank quarterly</i> 64 (Suppl. 1): 97-117.	Does not discuss population of interest - does not specifically address vulnerable populations
13	Pellecchia, U., et al. (2015)	Pellecchia, U., et al. (2015). "Social Consequences of Ebola Containment Measures in Liberia." <i>PloS one</i> 10 (12): e0143036.	Does not match outcome criteria - does not discuss outcomes of interest
14	Rajbhandari, B., et al. (2020)	Rajbhandari, B., et al. (2020). "Probable Exit Strategy Against COVID-19 of Low Resource Country like Nepal: Open Floor Discussion." <i>JNMA; journal of the Nepal Medical Association</i> 58 (224): 286-292.	Does not discuss population of interest - does not specifically address vulnerable populations

	Author (date)	Reference	Inclusion Reason
15	Reis, R. F., et al. (2020)	Reis, R. F., et al. (2020). "Characterization of the COVID-19 pandemic and the impact of uncertainties, mitigation strategies, and underreporting of cases in South Korea, Italy, and Brazil." <u>Chaos, solitons, and fractals</u> : 109888.	Does not address outcomes - Study is a model for infection rates
16	Riley, T., et al. (2020)	Riley, T., et al. (2020). "Estimates of the Potential Impact of the COVID-19 Pandemic on Sexual and Reproductive Health In Low-and Middle-Income Countries." <u>International perspectives on sexual and reproductive health</u> 46 : 73-76.	Does not match criteria for exposure -staying at home during a pandemic. Does not address outcomes of interest for this review
17	Roesch, E., et al. (2020)	Roesch, E., et al. (2020). "Violence against women during covid-19 pandemic restrictions." <u>BMJ (Clinical research ed.)</u> 369 : m1712.	Editorial
18	Rothstein, M. A. and C. N. Coughlin (2019)	Rothstein, M. A. and C. N. Coughlin (2019). "Ensuring Compliance With Quarantine by Undocumented Immigrants and Other Vulnerable Groups: Public Health Versus Politics." <u>American journal of public health</u> 109 (9): 1179-1183.	Does not discuss exposure of interest - staying at home during a pandemic
19	Ruiz-Perez, I. and G. Pastor-Moreno (2020)	Ruiz-Perez, I. and G. Pastor-Moreno (2020). "[Measures to contain gender-based violence during the COVID-19 pandemic]." <u>Medidas de contencion de la violencia de genero durante la pandemia de COVID-19.</u>	Article not translated - Only available in Spanish
20	Ryan, B. J., et al. (2020)	Ryan, B. J., et al. (2020). "COVID-19 Community Stabilization and Sustainability Framework: An Integration of the Maslow Hierarchy of Needs and Social Determinants of Health." <u>Disaster medicine and public health preparedness</u> : 1-7.	Does not discuss outcomes of interest
21	Sato, H. and M. Narita (2003)	Sato, H. and M. Narita (2003). "Politics of leprosy segregation in Japan: the emergence,	Does not discuss outcomes of interest

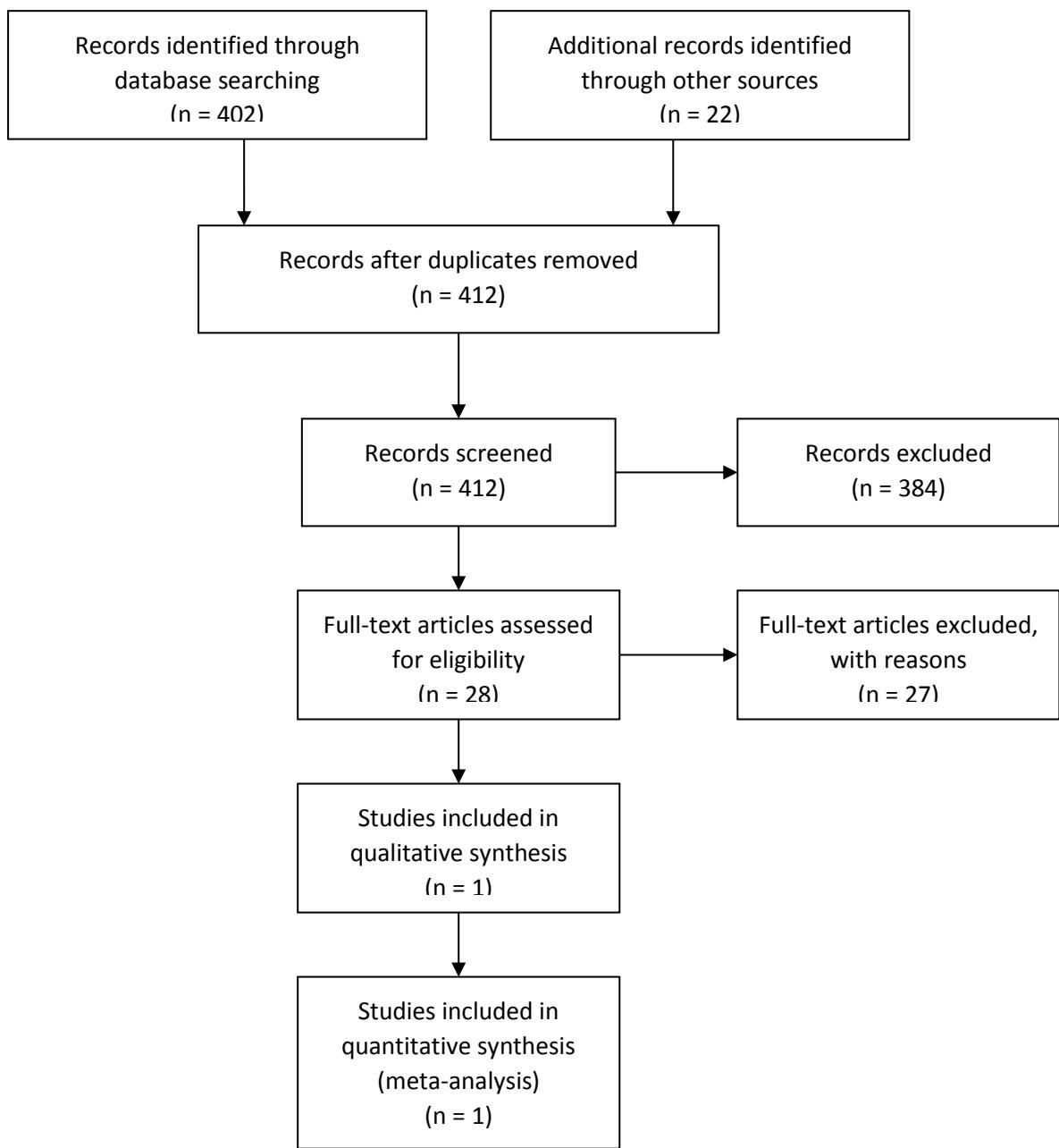
	Author (date)	Reference	Inclusion Reason
		transformation and abolition of the patient segregation policy." <u>Social science & medicine</u> (1982) 56 (12): 2529-2539.	
22	Seck, B. M., et al. (2007)	Seck, B. M., et al. (2007). "Experience in control of avian influenza in Africa." <u>Developments in biologicals</u> 130 : 45-52.	Does not discuss outcomes of interest
23	Thomas, G. (2020)	Thomas, G. (2020). "Death in the time of coronavirus." <u>Indian journal of medical ethics</u> V (2): 1-3.	Editorial
24	Van Lancker, W. and Z. Parolin (2020)	Van Lancker, W. and Z. Parolin (2020). "COVID-19, school closures, and child poverty: a social crisis in the making." <u>The Lancet. Public health</u> 5 (5): e243-e244	Comment paper - does not meet eligibility criteria

PRISMA Flow Diagram



PRISMA 2009 Flow Diagram

Identification



Appendix D

Grey Literature Search Methodology

Summary of Search

Web searching for grey literature related to low income populations and quarantine retrieved a lot of content related to the greater risk of transmission in low income populations. This was specifically due to either the higher risk of exposure in low paid work settings or the inability of homeless people to quarantine according to regulations due to the lack of suitable space.

Another theme in the grey literature search relates to economic harms experienced by low income populations and an increase in the number of people reduced to poverty as a result of the outbreak.

Mental illness, stress or violence are identified as health outcomes related to quarantine but mostly as broader public concerns that are not specific to economically vulnerable populations. While some sources say that economically vulnerable populations are generally at greater risk for these, citations are either scarce and some reference literature related to natural disasters to support this claim.

Several sites targeting specific vulnerable populations likely to represent groups that coincide with economic vulnerability were searched . There is a possibility that over-reliance on this grey literature content may introduce bias into the literature search findings as these groups were NOT used in the construction of the academic search strategy which only searched for content related to quarantine in low income populations.

Summary of sources and Search terms

Search location	Terms	Results retrieved	Results reviewed	Selected	Notes	Date
Google	"low income" OR poverty OR homeless "Self isolation" OR quarantine Harms filetype:pdf limited to update/publication in the last year.	Approx 180	all	17	Also -1 article selected from bibliography of improvement service document.	May 18
Google	poverty OR "low income" quarantine OR self isolation "domestic violence" OR "mental health" OR injury filetype:pdf limit to last year	200?	All 20 pages	10	Also selected one from a bibliography from a record	May 18
google	A Gender Lens on COVID-19: Pandemics			1		May 18

Search location	Terms	Results retrieved	Results reviewed	Selected	Notes	Date
	and Violence against Women and Children					
Google	"social distancing" OR "self isolation" OR "physical distancing" OR quarantine poverty or "low income" "white paper" or report or analysis or survey or findings filetype:pdf			0	Abandonned this – mostly economic content	May 18
National Collaborating Centre on SDOH	http://nccdh.ca/our-work/covid-19#Vulnerable%20populations	All		2		May 19
National collaborating center for healthy public policy				2		May 19
Ontario coalition against poverty	Viewed publications and what's new			0		May 19
Manpower Demonstration Research Corporation (MDRC)	Covid under publications tab	7	all	0		May 19
SAMSHA	Search: Harms self isolation	2	2	0		May 19
SAMSHA	Search: Harms or harm quarantine	0	0	0		May 19
SAMSHA	Search: Quarantine	26	all		Added 1 from citated reference list from result.	May 19
SAMSHA	Reviewed coronavirus page content		all	1	SAMSHA has provided grant funding for suicide prevention programs and	May 19

Search location	Terms	Results retrieved	Results reviewed	Selected	Notes	Date
					first nations mental health supports during covid 19- program specific details are not supplied. See website	
CAMH	quarantine		all	0	All public tips/no research	May 19
Canadian mental health association site search through google.	"low income" quarantine site:cmha.ca	9	0		Selected 6 items from reference list for IASC publication listed on the site entitled "Briefing note on addressing mental health and psychosocial aspects of COVID-19"	
IASC Interagency Standing committee:	Reviewed resources pages also searched quarantine and reviewed 5 pages of results		Reviewed 5 pages of content	1	Added 1 document that was referenced here. United nations policy brief 1 engagement of vulnerable population	May 25
Canadian centre on substance abuse and addiction CCSA	Searched quarantine	0	0	0		May 25
CCSA	Reviewed Specific topics: COVID, vulnerable populations			6		May 25
cacie	Searched site for quarantine also	1	1 search result and	0		May 25

Search location	Terms	Results retrieved	Results reviewed	Selected	Notes	Date
	reviewed what's new section	all	all content on whats new page			
The Ontario Prevention Clearinghouse	Quarantine	4	All	1	Also one citation from selected item	May 26
Opengrey opengrey.eu	Quarantine harms quarantine harm quarantine poverty quarantine low income	0	0	0		May 26
Institute for research on public policy irpp	Reviewed content from The coronavirus pandemic Canada's response special feature			3		May 26
Institute for social and policy studies Yale				0		May 26
ArXiv.org	Quarantine harms quarantine harm quarantine poverty quarantine low income		all	0		May 26
AARP policy institute	Quarantine	0		0		May 26
National Academies press	Quarantine – filtered by health equity quarantine – filtered by behavioral and social science Quarantine harm	2 17 3	all	0		May 26

Search location	Terms	Results retrieved	Results reviewed	Selected	Notes	Date
	Quarantine vulnerable population	2				
Ontario council of agencies serving immigrants	Research tab latest articles searched quarantine	Reviewed first page reviewed 3 pages 1		0 1	No “research” per se. Content about anti-racism against asian immigrants and lobbying government for inclusion of immigrants in economic supports	May 27
First nations information governance centre	News section searched quarantine	1 0	1 0	1 0		May 27
Canadian womens health network	Quarantine self isolation	1 3	1 3	0 0	Organization is no longer active as of 2017	May 27
homeless hub	Reviewed main page, searched site via google for social isolation, physical distancing, quarantine,			1	+1 link to external publication BC Centre on substance use	May 19
Google site search for homelesshub.ca	"social distancing" OR "self isolation" OR "physical distancing" OR quarantine site:homelesshub.ca			1		May 19
Medrxiv.org				6	Prepublication source	May 18
Poverty and Race research action council – site search through google	"social distancing" OR "self isolation" OR "physical distancing" OR quarantine site: https://prrac.org/	7	all	0		May 19

Search location	Terms	Results retrieved	Results reviewed	Selected	Notes	Date
Poverty and Race Research action council	Publications and policy briefs		all	0		May 19
Canadian institute of health research	Reviewed covid 19 page and page on showcasing of canadian research		all	1		May 27
Social Sciences and humanities research council	Reviewed perspectives https://www.sshrc-crsh.gc.ca/news_room-salle_de_presse/perspectives/covid-19-eng.aspx?utm_source=ems&utm_medium=website&utm_campaign=perspectives_covid-19_20200513	52	all	4	All items published in the conversation listed in news. (sources are opinions of academic researchers)	May 27
Canadian best practices portal	Quarantine self isolation	0 2	0 2	0 0		May 27
Psychology and clinical neuroscience journal	Special issue re: mental health and covid https://onlinelibrary.wiley.com/doi/toc/10.1111/(IS SN)1440-1819.mental-health-issues-associated-with-COVID-19-outbreak	Reviewed issue	All	5	Included in bibliography with science.gov articles.	May 27
Science.gov	Quarantine	1055	Reviewed first 200	32		May 27
CDC	Site search through google poverty quarantine harm OR violence site:cdc.gov vulnerable populations quarantine harm OR violence site:cdc.gov "vulnerable populations" quarantine harm OR			0		May 26

Search location	Terms	Results retrieved	Results reviewed	Selected	Notes	Date
	violence site:cdc.gov Limited to last year	9	all			
europa	Site search through google: quarantine harm site:europa.eu vulnerable population quarantine site:europa.eu limited to sources updated within the last year		Viewed first 3 pages of results viewed first 5 pages of results	2 1	Emailed european forum for urban security related to webinars listed on their website.	May 26
Blog search engine.org	quarantine low income OR poverty OR socioeconomic		Stoped after page 2 – mostly news.	6		
Twitter search	homeless quarantine harm vulnerable populations quarantine harm poverty quarantine mental health		All top posts	2	News items	May 26
Social Science Research Network.	Quarantine and low income Quarantine and poverty	7 4	all	1 2	Prepublication index	May 25
Social Science Research Network	Quarantine and harm	15	11	1	Prepublication index	May 25
Social Science Research Network	Quarantine and violence	6	all	0	Prepublication index	May 25

Search location	Terms	Results retrieved	Results reviewed	Selected	Notes	Date
Carleton university library – gov doc search – Canada	quarantine OR self-isolation poor OR poverty harm OR violence OR mental health	18	all	0		May 19
Carleton university library – gov doc search – Canada	quarantine OR self-isolation poor OR poverty OR socioeconomic	19	all	0		May 27
Statistics Canada – covid data	https://www150.statcan.gc.ca/n1/en/catalogue/45280001	All	all	9		May 27
Carleton university library – gov doc search USA	quarantine OR self-isolation poor OR poverty harm OR violence OR mental health	Reviewed 18 pages of results		7	This retrieved some additional academic findings due to the inclusion of Pubmed in the configuration of the US government doc search pool Added from citations = 2	May 26
Carleton university library – intergovernmental organizations	quarantine OR self-isolation poor OR poverty harm OR socioeconomic	18	Reviewed all	1 news item	Added from citations/related items = 1	May 27
Carleton University Library – europe gov search	quarantine OR self-isolation poor OR poverty OR socioeconomic	1	1	0		May 27
Centre for the study of post traumatic stress	Reviewed page on Covid 19 resources		all	4		May 27

Search location	Terms	Results retrieved	Results reviewed	Selected	Notes	Date
American Psychological Association	https://www.apa.org/topics/covid-19 - viewed physical distancing resources and a few others.			6		May 27
AHRQ agency for healthcare research quality	Covid resources Search quarantine	Reviewed all 40	Reviewed all	0		May 27
Institute for disaster mental health	Looked on main page for resources	0	0	0		May 27
Public health Agency of Canada				0	Browsed site generally – mostly pragmatic advice. Not a huge focus on vulnerable populations.	May 27
Biorxiv (prepub index for bio and medical)	quarantine and (low income or poor or poverty) and (group or population)	50	ALL	4		May 25-26
Native Health database	Searched quarantine https://hslic-nhd.health.unm.edu/Home/Search?searchType=basic	6	All	0		May 27