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A health impact assessment of gender inequities associated with psychological distress during COVID19 in Australia's most locked down state—Victoria

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Abstract

Background Since March 2020, when the COVID19 pandemic hit Australia, Victoria has been in lockdown six times for 264 days, making it the world's longest cumulative locked-down city. This Health Impact Assessment evaluated gender disparities, especially women's mental health, represented by increased levels of psychological distress during the lockdowns.

Methods A desk-based, retrospective Health Impact Assessment was undertaken to explore the health impacts of the lockdown public health directive with an equity focus, on the Victorian population, through reviewing available qualitative and quantitative published studies and grey literature.

Results Findings from the assessment suggest the lockdown policies generated and perpetuated avoidable inequities harming mental health demonstrated through increased psychological distress, particularly for women, through psychosocial determinants.

Conclusion Ongoing research is needed to elucidate these inequities further. Governments implementing policies to suppress and mitigate COVID19 need to consider how to reduce harmful consequences of these strategies to avoid further generating inequities towards vulnerable groups within the population and increasing inequalities in the broader society.

Keywords COVID19, Lockdown, Policy, Australia, HIA, EFHIA, Inequity, Mental health, Women

Background

Since March 2020, COVID19 involving a novel coronavirus (SARS-CoV-2) with rapid transmission and widespread infection brought the world to a standstill [1, 2].

COVID19 directly impacts physical health, with indirect impacts on social, psychological and economic dimensions. Consequently, numerous non-pharmacological public health interventions have been employed globally to contain and reduce disease transmission and associated deaths from SARS-CoV-2 [2–7].

Lockdown (stay-at-home, shelter-in-place) policies represent one of the non-pharmacological interventions (NPIs) enacted by governments to slow transmission through large-scale physical distancing limiting contact between people [8]. They involve differing degrees of stringency (from soft recommendations to remain

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at home, to more challenging orders not to leave home except with clear, limited exceptions), extend for varying amounts of time, and may be initiated at different times of the local epidemic [9]. Based on simulation studies, a rapid review found that when combined with other measures such as school closures, travel restrictions and social distancing, COVID-19 infections and deaths might reduce [5]. From March 2020, Australia’s public health response centred on the use of lockdowns, enforcing government restrictions on the movement of citizens and operation of business on a large-scale, a foreign concept to most citizens prior to then. These kinds of movement restrictions should observe public health ethics to reduce the harms resulting from them—ethics are fundamental to good public health policy. Ethical policy would maximise advancement towards the public health goal and minimise individual restriction of liberties through proportionality while reducing social injustice [10, 11]. Although numerous studies have reported on the success

of lockdowns in mitigating viral transmission and flattening the curve [12–14], studies reporting on the indirect harms of lockdown are rare, as well as their contribution to non-COVID19 morbidity and mortality [14]. Previously, with other pandemics, the World Health Organisation (WHO) guidelines recommended that lockdowns be used as short-term measures for rearranging resources and protecting the health workforce [8]; however, there is no decisive and current evidence as to the best balance of measures and ethics needed to suppress a local COVID19 outbreak and reduce indirect harms. Unfair policy widens existing inequities causing further imbalance to equality, leading to downstream societal consequences such as increased poverty and hunger; education inequality; gender inequality; economic instability/recession; decreased community sustainability; health and well-being inequalities; increases in community conflict; and in the longer-term moving away from the Sustainable Development Goals (SDGs) [15]. Figure 1 shows

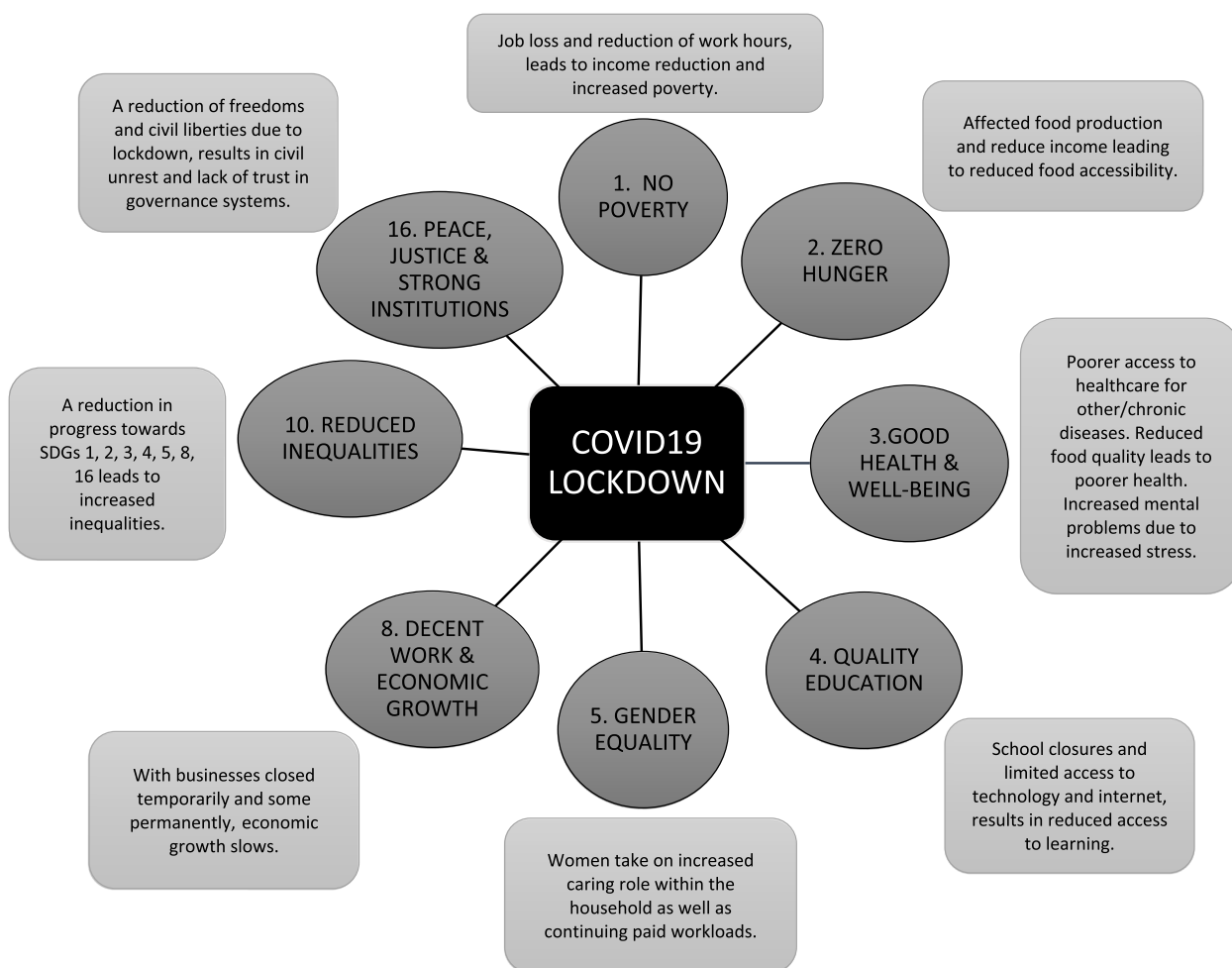


Fig. 1 Potential impact of lockdowns on progress towards the SDGs adapted from Filho et al. [15]

the potential impact lockdowns can have on progress towards the SDGs, adapted from Filho et al. [15].

Physical and mental health impacts from lockdowns vary and differentially influence health directly and indirectly among different individuals and populations through all settings, widening inequities and inequalities, and causing harm at both individual and societal levels through social injustice [16, 17]. Health inequities result from systematic differences in the health outcomes of different population groups due to differences in an individual's health position and resources arising from differing socio-economic environments [17]. Health inequities can also arise from unfair policies/interventions [17]. Table 1 shows potential health impacts (determinants) which may result from lockdowns.

Lockdowns, especially those that are less flexible, result in a significant disruption to everyday life, and consequently, many researchers have cautioned of the unintended mental health harms that may arise [14, 21, 22, 24, 29–34, 37–42, 47–51, 53–58, 64–71, 74–78, 102–109]. Psychological distress, a determinant of lockdowns and precursor to mental illness [110, 111], results from increasing uncontrollable stressors and demands, causing

difficulty coping with daily life; and often triggering feelings of depression and anxiety [112, 113]. It ranges in severity, but when severe, prolonged and untreated, it contributes to the development of mental and physical illnesses such as affective and anxiety disorders, suicidality, high blood pressure and cardiovascular disease [110, 111, 114–116]. Psychological distress presents differently among men and women [117]. Poor mental health and well-being pose a greater risk for specific groups of the population [118], with strong links showing women to be more at risk when compared to men [119–122].

Research on gender disparities in mental health has shown significant correlations with gender inequalities [123]. Gender inequality refers to circumstances where individuals are consistently given different opportunities as a consequence of inequitable (avoidable and unfair) attitudes, perceptions, and social or cultural norms about gender [124–126]. It can be present in terms of health, employment, wealth, status and power [124–126]. Examples of gender inequality include lower income for similar work [126–129]; higher levels of unpaid/carer work [128]; lower rates of schooling and secure employment [127, 129–131]; increased stress [132]; less opportunity

Table 1 Potential health impacts of lockdown policies

Determinants	
POSITIVE	NEGATIVE
Reduced transmission and deaths from SARS-CoV-2 [18–20]. (ST; LT; D)	Economic [21–24]: Loss of job, income, business [25, 26]; occupation [27]; increase in poverty [15, 28]. (ST; LT; D)
Reduced infections with infectious diseases in high-risk groups such as the elderly; those with premorbid conditions/immunocompromised; healthcare workers [18–20]. (ST; LT; D)	Mental health: increase in affective disorders (all age groups) [21, 22, 29–36]; eating disorders (children/adolescents) [34, 37, 38]; increase in behavioural disorders (children) [39–41]; cognitive decline (elderly) [42]. (ST; LT; I)
Reduced incidence and deaths from seasonal influenza [43–45]; reduced incidence of other infectious diseases [46]. (ST; I)	Psychological wellbeing: increased stress [21, 24, 47–49]; identity loss (income/job loss) [50]; loneliness [29]; social isolation [1, 23, 24]; reduced civil liberties [51]; increase in lifestyle changes [52], loss of routine; increase in overweight/obesity [47, 53, 54]; increase in alcohol [55–57] and tobacco consumption [58]
Injury: reduced fractures (not elderly) [59, 60]; reduced emergency department attendance due to injuries [60, 61]; reduced severity of fractures due to less sport, motor vehicle accidents [60–63]. (ST; I)	Relationship stress: reduced social interaction [32]; social bonding [32, 64]; intimacy and sexual intimacy [64–66]; increased domestic violence [22, 67–73]; divorce [65, 66, 74]; increase in gender inequality in family and work [75–77]; family life disruptions [24, 78, 79]. (ST; LT; D; I)
Health system: reduced health system burden due to outbreak [80–83]. (ST; I)	Reduced access to healthcare [84–86]: preventative screening resulting in short and long-term increases in non-communicable diseases; ceased elective surgery; ceased dental care/increased dental caries (ST; D; I)
Reduced lower back pain/joint pain [61] (ST; I)	Physical: increase in fractures in the elderly [61]; increased sleep disturbances [87]; increased screen time (children) [88]; increase in cardiovascular and metabolic disease [89–91]; increase in overweight/obesity [47, 53, 54]; increased food insecurity [22]; increase in alcohol [55–57] and tobacco consumption [58] (ST; LT; D; I)
Reduced premature births [92, 93] (ST; LT; I)	Reproductive/sexual health: reduction in HIV postexposure prophylaxis treatment [94]; increased risk of sexually transmitted infections (STI) [95]; increase in maternal and child deaths (disrupted health systems and access to food) [96] (ST; LT; I)
Increased physical activity [21] (ST; I)	Decreased physical activity [97] (ST; LT; D; I)
Reduced air pollution/greenhouse gas emissions due to less travel (Motor vehicles, boats, planes) [98–100]. (ST; I)	Increased pollution from increase in single-use items eg. takeaway food and drink packaging, increased PPE [101] (ST; I)

Health impacts may be direct (D) or indirect (I), short-term (ST) or long-term (LT)

for representation in high-level jobs [126–129]; and increased risk and exposure to sexual assault, intimate partner abuse, and gender-based violence [133, 134]. Gender inequities and resulting inequalities primarily impact women and girls [126] and are linked with altered health-related beliefs and behaviours [135].

Strong support exists for assessing the health impacts of significant policies, plans, programs and projects to address inequalities [136]. An Equity-Focused Health Impact Assessment (EFHIA) is a category of Health Impact Assessment (HIA) and an essential technique to identify and evaluate inequities arising from the introduction of a policy/intervention within populations through a systematic framework incorporating health impact assessment methodology [137, 138]. The distribution of health impacts is often evaluated using existing data, information and evidence to assess the degree to which the distribution occurs due to avoidable and unfair factors to minimise these inequities and social injustice [137, 138]. Policy analysis and the identification of inequities are critical components of policy implementation. Although policies/interventions are intended to protect people from health-related harm, they inadvertently risk generating harm, worsening inequities and widening inequalities within societies [3, 139, 140]. Increased awareness of these inequities will allow policymakers to make nuanced accommodations for different populations and help to inform policy evaluation to produce a more equitable approach at state and national levels for future pandemic preparedness.

Within Victoria, Australia, in early July 2020, there was an upsurge of community outbreaks of SARS-CoV-2, and in response, on July 8, areas of Melbourne were placed into lockdown with activity restrictions increased for the remaining areas in Victoria. However, a significant decrease in viral transmission did not occur. Consequently, on August 2 2020, Victoria entered a State of Disaster and State of Emergency to enact a stringent state-wide lockdown by the Public Health Commander in conjunction with the Chief Health Officer and Premier [141]. Stay-at-home direction (No 7) was enacted [141] to restrict the movement of all Victorians, with further policy directions implemented for a proposed period of 6 weeks [141–153]. The purpose of the lockdown was to address the public health risk posed by increasing clusters of COVID19 infections through the limitation of public movement and interaction, thereby suppressing the transmission of SARS-CoV-2 to reduce infections, deaths and health-system overburden [141–150]. Stringent restrictions consistent with a stage 4 (metro)/stage 3 (regional) lockdown were imposed throughout the state, including night-time curfews and restrictions on

day-time movement for activity, time, number of people and distance, both in Greater Melbourne and to a lesser degree, regional Victoria [141, 143–153]. Mask wearing was mandatory [141, 143–153]. Non-essential businesses were closed, and visitors were not permitted at private residences or aged-care facilities [141, 143–153]. The failure to observe the public health directions was punishable with penalties. The target population for the directions [141, 143–153] was all Victorians. Since the August 2020 lockdown, Victoria has endured four other lockdowns of varying durations (totalling six lockdowns since March 2020 or 264 days of lockdown), and their State of Emergency has been renewed 20 times [141, 144–171].

The gender inequities associated with increased psychological distress resulting from the Stay-at-home directions [151–171] used for COVID19 suppression and mitigation in Victoria have not yet been addressed in the literature. This study aimed to evaluate the gender inequities associated with increased psychological distress in Victorian women aged 18 and over living independently through the use of the EFHIA framework [137] during the Stay-at-home directions [151–171] for COVID19. It is hypothesised that Victorian women will experience increased psychological distress due to the gender inequities within the Stay-at-home directions [151–171], as represented by existing data and literature.

Methods

An EFHIA was chosen due to the uncertainty about the potential, differential and significant impacts of the stay-at-home direction. This project followed a combination of the Australian Collaboration for Health Equity Impact Assessment Equity-focused Health Impact Assessment Framework [137] and the University of New South Wales Health Impact Assessment: A Practical Guide [172] and followed the standard five-step evidence-based process: screening; scoping; impact identification; assessment of impacts; recommendations [137]. Ethics approval was not needed as this study retrieved, analysed and synthesised existing published data and literature.

Screening

The screening stage evaluated whether the EFHIA was a suitable strategy to identify the equity gaps of Victoria's Stay-at-home Directions for 2020–2021 [141, 144–171]. Screening helped to identify the associations between policy and health, equity and inequalities in health [137] through a series of questions querying the policy's contribution to health impacts and inequities. Supplementary Table 1 of the Supplementary Information shows an

adaptation of the screening tool completed at the start of the study.

Scoping

The scoping step established boundaries of time and scope for the assessment, determining which impacts would be considered [137]. Supplementary Table 2 of the Supplementary Information shows a checklist used to assist with the decision-making regarding the level of EFHIA to be performed. A desk-based/mini EFHIA was chosen as the timeframe for this EFHIA was particularly narrow, and there were limitations regarding capacity and resources. A steering committee was not employed as the project used a desk-based EFHIA. Supplementary Table 3 of the Supplementary Information contains a list of core values and guiding principles established and used for the EFHIA.

Impact identification and assessment

The researchers searched evidence-based literature (BB, TM) to identify this policy's likely and possible health impacts and their effect across different population groups. The health impact and target population were determined from the evidence-based literature search. The target population for the direction [159] was all Victorians. The target population for this EFHIA was determined to be women aged 18 and over living independently, and the health impact was mental health impacts represented by increased psychological distress. A health and sociodemographic profile for Victorians was constructed using the Australian Bureau of Statistics 2016 [173] census data and the Department of Health and Human Services Victorian Population Health Survey 2016 [174]. Thematic mapping was performed to help establish the determinants and their causal pathways to psychological distress and mental illness.

An extensive literature review involving a review of quantitative and qualitative published studies and grey literature was undertaken to find evidence of the relationship between gender and psychological distress and the psychosocial determinants identified in the study during lockdown; using the search terms and combinations provided in Supplementary Table 4 of the Supplementary Information. Sources of information and methods used to obtain the information are given in Supplementary Table 5 of the Supplementary Information. The project included studies published until December 2021. All studies included for analysis were published in English and the first six pages of each search result were reviewed for analysis. The Impact Assessment Matrix [172] provided the framework to analyse and synthesise the evidence. Supplementary Table 6 of the Supplementary Information shows the completed Impact Assessment

Matrix. Published peer-reviewed academic publications and local-government health data were weighted with greater significance than grey data by the researchers (BB, TM). Data were analysed, and the impacts were synthesised. Impacts were classified as moderate or limited, positive or negative, highly probable or probable, and long or short term.

Results

Results from the demographic profiling on the 2016 census [173, 175], show Victoria recorded 5,926,624 people and of these, 50.9% ($n=3,018,549$) were female and 49.1% ($n=2,908,077$) were male [173, 175]. The total population over the age of 19 is 4,489,371 persons. The median age of Victorians is 37 years, and with over 124 ethnicities, Victoria is considered a highly multicultural state [173]. 13% of Victorian households do not have internet access [173]. Throughout the remainder of this paper, the authors have tried to maintain consistency in language regarding sex and gender but original data sources are inconsistent, and so to stay inline with original sources, we refer to either male/female or men/women interchangeably. We realise, however, that they are different constructs.

Table 2 compares Victorian males and females socio-demographically [175]. It shows a higher proportion of females (55.7%) out of the workforce and unemployed (6.7%) compared with males (28.1%, 6.6%), and a more significant proportion with part-time jobs (48.3% vs 22.2%) [175]. The table shows that females are more likely to spend time in caring roles and unpaid work (domestic; care of children, disabled, sick or elderly) than males [175]. The top employment industries for females are healthcare, education and retail [175]. The top employment industries for males are construction, manufacturing and retail [175].

Results from the health data profiling show that for females within Victoria, a mental health condition was the most common long-term health problem, while for males, it was asthma [175]. Table 3 shows that in 2016, females were experiencing higher levels of high to very high psychological distress than males [174, 175]. It also shows females to be more likely (28.7%) to experience anxiety or depression than males (20.0%) [174, 175]. In 2020 pre-pandemic, 57% ($n=1,140$; $N=2,000$) of Victorians felt socially disconnected [176]; while in 2018, 25% ($n=419$; $N=1,678$) of Victorians felt lonely [177].

The screening step enabled the identification of the health impact and psychosocial determinants. The health impact identified as a highly likely impact of lockdown was psychological distress. From screening, psychosocial determinants directly impacting lockdown were loneliness, social isolation, occupation, income, and

Table 2 Victorian (2016) indicators for employment, education and unpaid work by sex
 (Source: What we do? Employment, Unpaid work: Informed Decisions Community Demographic, Available from <https://profile.id.com.au/australia/employment-status?WebID=110>) [175]

	Victoria 2016 Aged 15 and over		
	Males	Females	
Employed Full-time	69.3% <i>n</i> = 1,067,764 <i>N</i> = 1,541,195	43.4% <i>n</i> = 602,791 <i>N</i> = 1,388,404	
Employed Part-time	22.2% <i>n</i> = 1,440,119 <i>N</i> = 1,541,195	48.3% <i>n</i> = 670,577 <i>N</i> = 1,388,404	
Unemployment rate	6.6% <i>n</i> = 101,076 <i>N</i> = 1,541,195	6.7% <i>n</i> = 92,393 <i>N</i> = 1,388,404	
Total Labour Force participation	65.5% <i>n</i> = 1,541,195 <i>N</i> = 2,353,502	55.7% <i>n</i> = 1,388,404 <i>N</i> = 2,492,205	
Persons not in Labour Force	28.1% <i>n</i> = 662,274 <i>N</i> = 2,353,502	38.0% <i>n</i> = 947,862 <i>N</i> = 2,492,205	
Unpaid Domestic work	63.8% <i>n</i> = 1,502,166 <i>N</i> = 2,353,506	72.8% <i>n</i> = 476,051 <i>N</i> = 2,492,194	
Unpaid care disability, elderly, long-term illness	9.4% <i>n</i> = 220,774 <i>N</i> = 2,353,503	13.6% <i>n</i> = 340,093 <i>N</i> = 2,492,206	
Unpaid care children	23.7% <i>n</i> = 558,178 <i>N</i> = 2,353,497	30.9% <i>n</i> = 770,988 <i>N</i> = 2,492,209	
Top 3 Employment Industries	13.9% <i>n</i> = 200,807 <i>N</i> = 1,440,104	Construction 20.9% <i>n</i> = 270,795 <i>N</i> = 1,296,021	Healthcare & Social assistance
	10.5% <i>n</i> = 151,724 <i>N</i> = 1,440,104	Manufacturing 12.8% <i>n</i> = 165,409 <i>N</i> = 1,296,021	Education & Training
	8.5% <i>n</i> = 122,391 <i>N</i> = 1,440,104	Retail Trade 12.1% <i>n</i> = 157,246 <i>N</i> = 1,296,021	Retail Trade

Table 3 Proportions of psychological distress, anxiety and depression experienced by males and females in Victoria in 2016
 (Source: Department of Health and Human Services. Victorian Population Health Survey 2016 [174])

	Victoria 2016	
	Males	Females
Psychological Distress (High/ Very high) 18 yrs & over [174]	13.2% <i>n</i> = 383,866 <i>N</i> = 2,908,077	16.5% <i>n</i> = 498,060 <i>N</i> = 3,018,549
Anxiety/Depression 18—84 yrs [174]	20.0% <i>n</i> = 581,615 <i>N</i> = 2,908,077	28.7% <i>n</i> = 866,234 <i>N</i> = 3,018,549

relationships/family life. Figure 2 shows the thematic mapping resulting from the scoping step of the EFHIA framework [137]. Thematic mapping assisted in the identification of causal links from the psychosocial determinants to the mental health impact of psychological distress.

Within the diagram, individual stressors and relationship stressors directly impact on psychological distress, which directly impacts on mental illness (white circles and arrows). Individual stress can also impact families and relationships, resulting in relationship stress and contributing to psychological distress [24, 78]. All psychosocial determinants within this analysis that are a direct result of the lockdown, are in black circles and are designated by a black arrow approaching them. Causal pathways from the psychosocial determinants of lockdown, were drawn to show the impact of individual stress

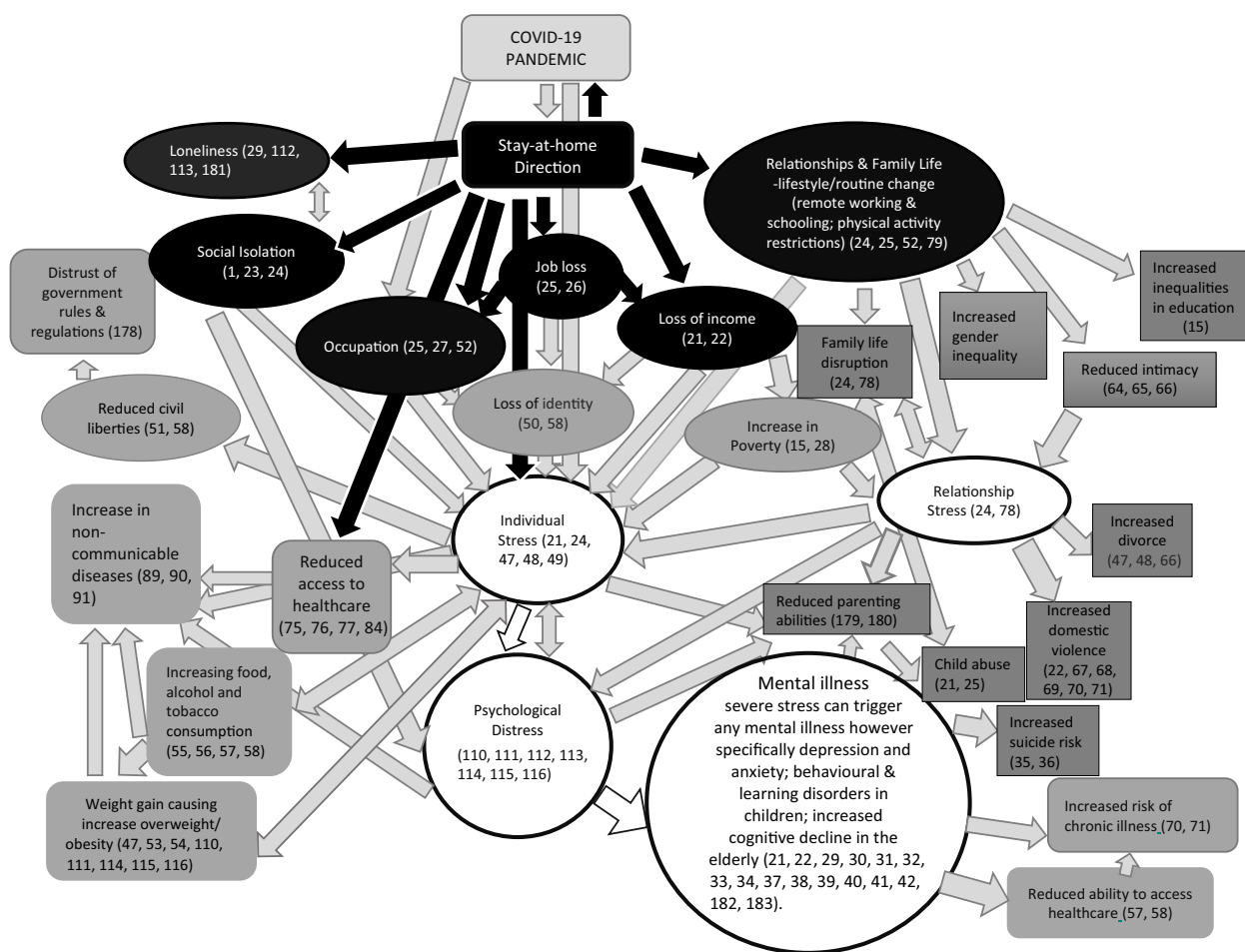


Fig. 2 Thematic mapping demonstrating hypothetical causal pathways of psychosocial determinants contributing to psychological distress during lockdown

and psychological distress from ongoing individual stress [110, 111]. Psychological distress can be experienced directly and indirectly from the psychosocial determinants [114, 115].

Loneliness

Loneliness, a subjective feeling of disconnectedness, has been associated with increased mental health problems such as stress, psychological distress, depression, suicidal ideation and cognitive decline, as well as physical health problems such as cardiovascular disease and premature mortality; through increased involvement with health-risk behaviours [104, 169, 178–186]. Within the context of COVID19 lockdowns, loneliness has been highlighted as one of the significant determinants of depression, anxiety and psychological distress [187, 188].

Social isolation

Social isolation or disconnectedness refers to an impartial physical separation from social connections [189].

Brief encounters with social disconnection can trigger negative emotions, while prolonged disconnection is linked to the development of internalising disorders such as depression and suicidality [189]. Lockdowns directly result in a restriction of mobility affecting the social connection of people [176, 190].

Occupation

Research has recognised certain occupations to be associated with a greater risk of psychological distress [191, 192]. Occupations considered frontline or essential in Australia for COVID19 have included those in security, hygiene, healthcare, essential retail, transport and delivery, childcare and education, aged care, disability and law enforcement [173, 193]. Workers within these occupations must contact the public directly, putting theirs and their family’s health and safety at risk when returning home [193]. Healthcare was used in this assessment.

Income

A strong association has been observed between an individual’s income and mental health [194]; low income, job loss, unemployment and poverty resulting in financial strain, psychological distress, and mental illness [116, 195–199]. During COVID19, there has been a high prevalence of psychological distress in people who have lost their jobs or casual workers who have no income during lockdown [196]. Numerous studies have highlighted the impact of socioeconomic stress (including job or income loss) from lockdown on individuals and its contribution to psychological distress [21–24, 200].

Relationships and family life

Relationship dissatisfaction is strongly associated with psychological distress for both men and women [201]. Individuals with good relationship quality showed better mental health and performed significantly better on mental health scales than individuals with poor or no relationship quality [32]. Poor mental health affects individuals and the network of people with close involvement, such as relationships with partners and children [201–204]. Parent mental health directly affects parenting ability, with continual negative emotions triggering children’s emotional, behavioural and learning problems [205–208].

Impact assessment

Impacts were evaluated using locally available data for Victoria and Australian data to assess whether a gender disparity exists for women regarding psychological distress during the lockdowns using the psychosocial

determinants identified during screening. Table 4 briefly describes the key local data sources used in this assessment.

The VicHealth study [176] showed that 16% of the population reported an increase in psychological distress to high levels during Victoria’s second lockdown in 2020. Psychological distress was more evident in 18–24 year-olds; respondents in inner metro areas; respondents who speak another language at home; people with disability; unemployed respondents; and those living in bushfire areas [176]. Gender differences were not observed in this study.

ABS surveys [211–220] examined mental well-being in the Australian population during the first lockdown in 2020 and reported poorer results than before the lockdown. Table 5 shows higher levels of anxiety and depression for females when compared with males. Data further suggested that from May to August 2020, 19% of females compared to 9% of males felt so depressed that nothing could cheer them up [219].

Table 5 Anxiety and depressive symptoms recorded (Source: ABS Household Impacts of COVID19 survey August, N = 1,000 [219])

Anxiety-based symptoms	Females (%)	Males (%)
Restless or fidgety	43.5	38.4
Nervous	50.0	41.0
Everything an effort	44.7	36.2
Symptom relating to depression—Loneliness	28.0	16.0

Table 4 Main local data sources used to inform this assessment with brief descriptions

Data Source	Description
VicHealth Coronavirus [176] VicHealth Coronavirus. Victorian Well-being Impact Study	<ul style="list-style-type: none"> • Impact on health and well-being of COVID19 • N = 2000 Victorian adults completed online population-based survey during the first lockdown in March • Study characteristics—self-reported, population-based, online, cross-sectional, volunteers
The COLLATE project [200, 209] COvid19 and you: mental. health in AusTralia now survEy	<ul style="list-style-type: none"> • A series of monthly online population-based surveys (N = 5158) tracking the impact of COVID19 and government restrictions on the mental health and well-being of Australians conducted by Swinburne Centre for Mental Health (data collected from the first wave of COVID19, not always lockdown specific depending on the month) n = 1292 of the sample surveyed with self-reported mood disorders • Study characteristics—self-reported, population-based, online, cross-sectional, volunteers
ANU survey [210] Tracking outcomes during the COVID19 pandemic	<ul style="list-style-type: none"> • Monitoring the impacts of COVID19 • population-based surveys (April 14/4–27/4 N = 3155), May (12/5–24/5 N = 3249), on Australian population and August (10/8–24/8 N = 3061) for Australian & Victorian data • Aims to update national-level trends in well-being data • Study characteristics—survey used is Life in Australia™—longitudinal survey of a large, representative sample of Australians
ABS surveys [211–220] Household Impacts of COVID19 surveys	<ul style="list-style-type: none"> • Monthly household impacts of COVID19 online surveys on the broader Australian public (not always lockdown specific depending on the month), N = 1,000 per month • Study characteristics—self-reported, population-based, online, cross-sectional, volunteers

Biddle et al. [210] found psychological distress to increase during the first lockdown, with 47% of the survey sample indicating they were more stressed even when infection numbers decreased. Other elevations in psychological distress that occurred between May and August, saw a considerable deterioration of mental health for females in Victoria during the second lockdown [210]. A strong association was evident between a symptom of depression (loneliness) and social connectedness with increased stress due to socioeconomic factors, such as income, housing and work hours [210]. Similarly, data from the COLLATE study [200] showed that during the first lockdown, negative emotions such as anxiety, depression and stress were more elevated for women.

Data from newspaper reports showed Lifeline in Victoria recorded a 30% increase in telephone counselling from the start of lockdown 2 Stage 4 restrictions due to increased stress and anxiety arising from social distancing, quarantining, isolation and disconnection from family and friends [221]. Headspace saw a 50% increase in young people with an increased risk of self-harm and suicide who had been admitted to the emergency department with a mental health crisis. Referrals for young people to the emergency department for self-harm increased 33% compared with August 2019 [221]. There was a significant increase in the need for mental health services seen among women presenting with anxiety, depression and obsessive-compulsive disorder at The Alfred hospital [222], with new referrals for women increasing from 5 per week in 2019 to 110 within one week in late July 2020.

The psychosocial determinant, loneliness, was assessed using ABS survey data [215] and ANU survey data [210]. In Fig. 3, both surveys showed an increase in loneliness for both men and women over the months; however, even more elevation for Victorian women in August 2020. A strong association was evident for women for psychological distress with a symptom of depression (loneliness), with increased stress due to socioeconomic factors,

such as income, housing and work hours [210]. Lifeline and Beyond Blue data for telephone counselling show increased loneliness (Lifeline, Beyond Blue) from April–May 2020 with no note of gender differences [223, 224].

Data from the VicHealth study [176] for the psychosocial determinant, social isolation, showed that 30% of respondents found it harder to stay connected to others, with a 37% decrease in feeling connected with others and a 23% increase in social isolation. Respondents with a disability, living in regional areas, unemployed, low income, living alone or in a share house, reported feeling even less socially connected; however, no gender difference was observed [176]. A strong association was evident for women for psychological distress with social connectedness, with increased stress due to socioeconomic factors, such as income, housing and work hours [210].

Healthcare worker data was used for the determinant, occupation. Infection analyses were conducted on the Healthcare Worker Dashboard [225] for September and October 2020 and showed that for healthcare workers, infection was significantly higher than non-health-care workers, with odds ratios of 5.02 compared with 1. The odds ratio was highest for aged care workers at 11.81 [225]. Data from the Department of Health and Human Services (2021) showed that within the healthcare industry, the second lockdown in Victoria saw higher numbers of infections among healthcare workers [226], as shown in Table 6. Between July 1 to August 25, 2020, 69–90% of healthcare worker infections were acquired at work [227].

Data from the Alfred Hospital showed an increase in anxiety presentations from healthcare workers [222], while the Royal Melbourne Hospital shows that 68.3% of infected nurses work within geriatric and rehabilitation wards [228].

Income data from Equity Economics (2020) showed that between February and July 2020, women lost 61% of their jobs [229]. During the second Victorian lockdown, industries employing 243,800 women and 210,000 men

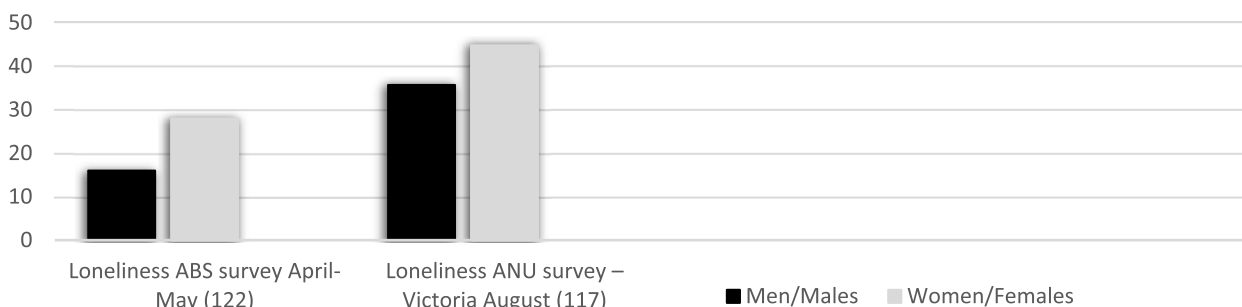


Fig. 3 Loneliness ratings for Men and Women in Australia, April/May and Victoria, August 2020

(Source: ABS Household Impacts of COVID19 survey 29/4/2020–4/5/2020 N = 1,000 [215] & Tracking outcomes during the COVID19 pandemic 2020, N = 3,061 [210])

Table 6 COVID19 infections in a healthcare setting
(Source: Healthcare Worker Infections Dashboard 2021, Available from: <https://healthcareworkersaustralia.com/analytics/> [227])

Occupation	Total number of COVID19 infections	% COVID19 infections acquired at work
Aged and disability care workers	924	90
Medical practitioner	106	77
Nurse (all setting)	922	89
Other healthcare areas	303	69

closed [229]. Since March 2020 within Victoria, throughout the first and second lockdowns, the ABS recorded a steady decrease in payroll data for women in jobs of 7.1%, with July data (before the second lockdown) showing job loss for women to be five times the rate for men [230, 231]. Within Australia, ABS data from March–April 2020 showed employment fell by 5.3% for women and 3.9% for men [231]. Within Australia, from March 2020, the most burdened industries by job loss were accommodation/food services, retail and arts/recreation [230–232]. Australian data describing hours worked showed men dropped 7.5% while women dropped 11.5%, consequently burdening women more so than men [232]. The COLLATE study [200] found that financial stress and job loss were associated with increased psychological distress during lockdown, while lower levels of distress were associated with higher incomes and savings.

For the relationships/family life determinant, 20% of relationships within Victorian homes became more strained during lockdown, and this was particularly apparent for groups who were unemployed; parents with child (ren); or those in a share house [176]. Table 7 shows the burden and increased stress placed on home life with lockdown. From the table, it is evident that mothers (women) spend significantly more time helping children, looking after children, carrying out domestic work, and other caring work than fathers (men) do.

A study by Relationships Australia [74] showed that 42% of Australians experienced an adverse change in

their relationship due to lockdown, with 55% reporting socioeconomic reasons for change. No gender difference was reported in this study. However, an Australian study [75] showed that paid work time was slightly lower and unpaid work much higher for mothers during lockdown than before it, with fathers noticing a slight increase in time spent caring for children, and most mothers noting an increase in dissatisfaction.

Supplementary Table 6 of Supplementary Information contains the Impact Assessment Matrix used in the analysis of the studies to demonstrate the level and strength of the evidence supporting the impacts and determinants of lockdown. The table shows that when this assessment was performed, limited local data were available; however, of all the evidence analysed, a moderately strong relationship was found between women’s gender inequities and the increased psychological distress resulting from lockdown policy. Similarly, the psychosocial determinants of loneliness, income, occupation and relationships/lifestyle were found to also increase psychological distress in women with moderate strength. Social isolation demonstrated limited strength. The nature of the impact is negative, and the potential size of the impact is large. This impact can have short and long-term effects.

Discussion

This study evaluated the gender inequities associated with increased psychological distress resulting from the Stay-at-home directions [151–171] used for COVID19 in Victoria during 2020–2021 using the EFHIA framework [137]. It highlights avoidable inequities which contribute to mental illness. The evidence gathered supported the hypothesis: a gender disparity was identified for women for the mental health impact of increased psychological distress resulting from lockdown policy. The psychosocial determinants—loneliness, income, occupation and relationships/family life were found to contribute to increased psychological distress for women in ways which could have been avoided.

The results showed moderately strong support for the impact of increased psychological distress. Data for Victoria and Australia obtained from the Tracking Outcomes during the COVID19 Pandemic study [210], ABS

Table 7 Burden placed on Mothers and Fathers for homelife factors during COVID19 lockdown
(Source: VicHealth Coronavirus. Victorian Well-being Impact Study, N = 2,000 [176]& ABS. Household impacts of COVID19 survey. 6–10 July 2020, N = 1,000 [220])

Homelife	Mothers (%)	Fathers (%)
Primary responsibility for looking after preschool children during lockdown	76.0 [176]	8.0 [176]
Most time spent helping children with remote learning	72.0 [176]	26.0 [176]
Unpaid domestic work	80.0 [220]	39.0 [220]
Unpaid caring	38.0 [220]	11.0 [220]

Household Impacts of COVID19 surveys [211–220] and COLLATE project [200, 209] all show an increase in psychological distress that is greater for women when compared with men. However, data from the Victorian Well-being Impact study [176], Lifeline [221, 224], and Headspace [221] did not demonstrate a gender difference for psychological distress. These results may be due to small sample sizes or the time-point in which the sample was taken. Extensive evidence was found in the literature supporting increased psychological distress during lockdown for women, with women experiencing higher levels of distress than men [21, 22, 30, 31, 33, 55, 103, 233–253], and with some studies indicating that women were predisposed to experience higher levels [21, 31, 33, 122, 254] due to higher baseline levels in non-pandemic conditions. Table 3 is consistent with higher baseline levels of psychological distress, anxiety and depression for women compared to men. Xiong, Lipsitz [109] reviewed the association between the COVID19 pandemic and mental health for 19 cross-sectional studies and found women to be associated with higher levels of mental distress when compared with men. Psychosocial factors highlighted to be important in understanding the distress include age, gender, physical security, income, work conditions and work [21, 22, 33]. Consequently, the results suggest that pre-existing gender inequity exists for women's mental health and lockdown policies most likely exacerbated this inequity.

Data for Victoria and Australia show income changes during lockdown disproportionately burdened women. More women became unemployed or represented among the part-time workforce [231]. Women's paid hours of work decreased the most compared to men [232]; for some, due to the increased need to be carers during lockdown [77, 255]. This uneven job and income loss resulted in increased financial stress for women. Women are more likely to be employed in the casual or part-time workforce compared with men, causing them to have fewer leave entitlements [230]. Government policies introduced within Australia to support income loss through lockdown did not support many women in various industries [230], as work for them is often less secure and lower paid [256]. Global studies support women's income loss to be disproportionately affected by lockdown [76–78, 257–259]; however, studies also suggest that women's increased need to be carers at home during this time may contribute to this [77, 255]. Consequently, lockdown reinforced a reduction of paid work and increased unpaid work for women [260].

Table 2 shows the top three industries for employment for women are healthcare/social assistance, education/training, and retail, classed as essential services during the pandemic, thereby leaving women disproportionately

exposed to increased stress during lockdown from high-pressure and high-risk work. Workers in these industries were at higher risk for infections and could not work from home during lockdown [175, 227, 261, 262]. Increased mental health presentations for healthcare workers in Victoria demonstrate the increased distress and anxiety experienced due to increased infections experienced by healthcare workers [222, 228]. Evidence of increased distress and anxiety is noted in the global literature [263–275]. During the SARS and MERS epidemics, increased stress, anxiety, depression, and psychological distress were seen in healthcare workers, with some studies showing persisted elevation one year post the epidemics [276–283]. Increased anxiety and stress in healthcare workers is partially due to increased infections which have resulted from inadequate personal protective equipment [284].

In Victoria, relationships/family life were shown to become more strained [176]. Pre-pandemic data (Table 2) demonstrated that women were primarily responsible for unpaid work, whether domestic duties or the care of children, elderly family, sick or disabled. With 13% of Victorian households without internet access [173], working from home and home-schooling became impossible for these families, contributing to increased stress. Similar data can be seen in Table 7 during lockdowns. Within the literature, lockdowns were consistently shown to reduce paid work and increase unpaid work for women [75, 220, 260]. Mothers were more adversely affected by home-life stress [24, 41, 76, 78, 258, 285–288] and parental stress due to the uneven division of the care burden [109, 242, 246, 260, 289–295]. Factors contributing to increased parental stress included reduced parent resilience, social connections, sole parents, having special needs children and younger children [182].

The lockdown determinant of loneliness also demonstrated increased psychological distress disproportionately for women. Data from Victoria showed increased loneliness for both men and women from the first lockdown in April–May to the second in August 2020, with women scoring higher on both occasions [210, 215]. Another study in Victoria showed a strong association for loneliness between women and psychological distress due to socioeconomic factors such as income, housing and work hours [210]. Pre-pandemic [296, 297] and post-pandemic global studies further confirm that loneliness is a higher risk factor for women than men [1, 47, 242, 244, 245, 285, 296–309].

Conversely, the direct determinant of social isolation was not found to contribute to increased psychological distress for women, even though social isolation is a direct result of the restriction of mobility and connectedness of people that occurs with lockdown [176,

190]. Pre-pandemic studies have found men to be more socially isolated than women [310–313], and the ANU study [210] found women to feel more connected than men. Global studies during the pandemic have shown mixed results regarding social isolation [189, 246, 314–320] with no clear association with women experiencing more significant amounts of social isolation during lockdown. Consequently, social isolation may be a more suitable mental health determinant for men during lockdown.

It is well known that social factors affect mental health and the risk for mental illness [321]. Gender, a social construct, is considered a structural and social determinant of mental health/illness [117, 322–325]. The results of this study demonstrate that increased gender disparities are evident in women's mental health with the use of lockdown policies in Victoria from 2020–2021. Differential vulnerability and exposure to risks and differences that impact mental health and the outcomes, are influenced by a person's gender [325], and in this EFHIA, women experience poorer outcomes. The lockdown determinants used in this study further suggest that gender differentially affects the control and power both men and women have over these psychosocial determinants. Unfair public health policy that is negligent of mental health not only predisposes women to longer-term stress and distress but increases the risk of mental illness and poorer physical health outcomes [111, 114–116], creating additional levels of injustice, particularly during a pandemic. It is quite probable for the Victorian lockdowns, the compounding effects of multiple lockdowns over time, would worsen the determinants contributing to psychological distress and the risk of long-term mental illness [326].

In order to address the problems of increasing mental illness during COVID19, improved awareness of the gender dimension of mental health during lockdowns is required. Although this study has addressed a gap within the literature regarding policy generating gender disparities in mental health during lockdowns; future research is critical to address others, especially with the increased risk of future pandemics arising from the ecological spill-over from animals to humans and environmental damage [327]. Based on our findings, we recommend that future policy and decision-making prioritise minimising negative impacts and injustice so that they may better reflect public health ethics.

Limitations of the assessment

Limited local data was available at the time of the assessment; therefore, studies with Victorian or Australian data were selected for local data. Most studies use population-based surveys where people volunteered to participate

and self-report responses, introducing response bias and sampling errors. Sample sizes were often small; methods were not always detailed; consequently, data may not be generalisable. Samples were often cross-sectional, being, restricted to a specific time-point, which limited the evaluation of the long-term impacts on mental health. In most of these studies, sampling was conducted during the early stage of COVID19 and lockdown in April 2020; therefore, mental illness will not have become established.

Further limitations involve the framework used to assess the equity deficit. A mini EFHIA generally evaluates the existing literature and data by a single researcher. A comprehensive EFHIA, incorporating a focus group of key community stakeholders, could help reduce bias, enabling an improved selection of determinants for the equity analysis.

Future research

Future research should endeavour to understand further the factors contributing to stress and mental illness during lockdown to mitigate the avoidable mental health inequities attributable to public health lockdown policies used during COVID19. A comprehensive EFHIA incorporating the use of a focus group of key community representatives would be a helpful next step to elucidate further the inequities associated with these Stay-at-home directions [151–171] and reformulate policy for future pandemic preparedness.

Future research should also look to characterise the women affected differentially by lockdown policy further. Evaluating the social drivers can help further understand the impact of inequities and inequalities of policy on women. Additional studies that aim to fully elucidate the complex dynamics of psychological distress and the development of mental illness are needed. By understanding these factors, we can better understand the drivers of mental health inequities and inequalities within policy. Research in this area would also help to understand how this hinders progress towards the Sustainable Development Goals.

Recommendations

The following recommendations are suggested.

Upstream

1. Educating and supporting families and couples upstream through evidence-based multimedia education programs aimed at changing gender-based norms perpetuating the inequities of homelife and parenting for women [222].

2. Developing national and state-level income relief policies addressing the social and economic policies that continue to drive inequalities and provide sufficient relief to allow workers to stay home without income stress [222, 230].
3. Research has shown that animal ownership can be beneficial in mitigating some of the detrimental mental health effects of lockdown [328–331]. Animal shelters could initiate a borrowing service to assist people's well-being for those who would benefit from having an animal but may be unable to commit to a pet as a long-term endeavour.
4. Pre-pandemic data shows that being outdoors is associated with increased positive emotional well-being with the potential to mitigate feelings of loneliness [332–334]. Lockdowns restricting time spent outdoors should be discouraged as the ability to spend time outdoors becomes even more important to mental health and well-being [335]. Developing policy informed by this data may affect emotional well-being during future surges or pandemics.
5. School and childcare closures create additional burdens for parents, predominantly women. Although children were initially thought to be vectors for SARS-CoV-2, data to date lacks evidence of widespread paediatric transmission [336, 337]. When formulating policy, policymakers should consider the balance of risks to children's health, development, well-being and learning generated by not attending school versus disease transmission [338–340]. They should also consider the effect closures will have on the family unit. Lockdown policies that limit the closure of schools and childcare are critical in reducing the burden of unpaid work, particularly for women and improving women's mental health. These policies should also allow for nuance to include families with medical vulnerabilities [341–344].

Downstream

1. Providing increased financial accessibility to mental healthcare through increased Medicare rebates for mental health sessions for all individuals, with additional sessions aimed at improving women's mental health [345–347].
2. Ensuring increased capacity within healthcare with cultural and gender diversity to effectively manage increased demand for mental healthcare [118].
3. Ensuring increased accessibility to mental health care by removing gatekeeping and enabling individuals to make direct contact with their mental health provider without the referral of a primary care practitioner to

reduce waiting times. Gatekeeping is traditionally associated with a need to control healthcare expenditure. Although gatekeeping has been associated with better quality of care, it is also associated with lower healthcare use and patient satisfaction [346–348].

4. Supporting families and relationships during the pandemic through family and relationship therapy with professionals trained in managing lockdown effects prevents the snowballing effect of increased stressors [286].

Conclusion

The EFHIA framework helped to identify inequities associated with gender and a precursor of mental health problems, psychological distress, for the lockdown policies used in Victoria during 2020–2021. It provides an important perspective to the existing literature, highlighting areas where public health policy can be modified to reduce gender inequities and inequalities. Literature suggests that progress towards SDGs, including gender equality, will be obstructed by lockdown policies however further evaluations should be pursued as evidence. Public health practitioners should work closely with policymakers through the identification of key strategies to improve social justice in implemented policies. With increased risks of future pandemics due to ecosystem and climate change, understanding the impacts of lockdown policy can help prepare us to reduce inequities in future lockdown policy, consequently the importance of this work reaches beyond the scope of COVID19.

Abbreviations

EFHIA	Equity Focused Health Impact Assessment
HIA	Health Impact Assessment
NPI	Non pharmaceutical intervention
SDGs	Sustainable Development Goals
ABS	Australian Bureau of Statistics

Supplementary Information

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Additional file 1: Supplementary Table 1. Screening questions used during the screening phase of the Equity Focused Health Impact Assessment (adapted from Appendix 1: Screening Tool for Health Impact Assessment, Health Impact Assessment: A Practical Guide (1)). **Supplementary Table 2.** Checklist for level of depth of HIA (reproduced from Appendix 2: Checklist for level of depth of HIA, Health Impact Assessment: A Practical Guide (1)). **Supplementary Table 3.** Core values and guiding principles. **Supplementary Table 4.** Search terms and combinations used to find evidence. **Supplementary Table 5.** Source of information and methods used to obtain it. **Supplementary Table 6.** Impact Assessment Matrix (reproduced from Appendix 3: Comprehensive Assessment Matrix, Health Impact Assessment: A Practical Guide (1)).

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Authors' contributions

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Declarations**Ethics approval and consent to participate**

This study did not involve any human participants or human material. The human data in this study was obtained from published resources which are publicly available. While ethics approval was not required, the methods used in this study were performed in accordance with the relevant guidelines, outlined by The National Statement on Ethical Conduct in Human Research, published by the Australian Government.

Consent for publication

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Competing interests

The authors declare that they have no competing interests.

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References

- Robb CE, de Jager CA, Ahmadi-Abhari S, Giannakopoulou P, Udeh-Momoh C, McKean J, et al. Associations of social isolation with anxiety and depression during the early COVID-19 pandemic: a survey of older adults in London UK. *Frontiers in psychiatry*. 2020;11:591120.
- World Health Organisation. Timeline of WHO's response to COVID-19 Geneva: World Health Organisation; 2020 Available from: <https://www.who.int/news/item/29-06-2020-covid-timeline>. [Cited 18 Oct 2020].
- Glover RE, van Schalkwyk MC, Aki EA, Kristjansson E, Lotfi T, Petkovic J, et al. A framework for identifying and mitigating the equity harms of COVID-19 policy interventions. *J Clin Epidemiol*. 2020;128:35–48.
- Pan A, Liu L, Wang C, Guo H, Hao X, Wang Q, et al. Association of public health interventions with the epidemiology of the COVID-19 outbreak in Wuhan. *China Jama*. 2020;323(19):1915–23.
- Nussbaumer-Streit B, Mayr V, Dobrescu AI, Chapman A, Persad E, Klerings I, et al. Quarantine alone or in combination with other public health measures to control COVID-19: a rapid review. *Cochrane Database Syst Rev*. 2020;9.
- Hartley DM, Perencevich EN. Public health interventions for COVID-19: emerging evidence and implications for an evolving public health crisis. *JAMA*. 2020;323(19):1908–9.
- Lewnard JA, Lo NC. Scientific and ethical basis for social-distancing interventions against COVID-19. *Lancet Infect Dis*. 2020;20(6):631.
- World Health Organisation (WHO). Coronavirus disease (COVID-19): Herd immunity, lockdowns and COVID-19 Geneva: WHO; December 2020 [Available from: <https://www.who.int/news-room/q-a-detail/herd-immunity-lockdowns-and-covid-19>].
- Plümper T, Neumayer E. Lockdown policies and the dynamics of the first wave of the Sars-CoV-2 pandemic in Europe. *J European Public Policy*. 2020;29(3):321–41.
- Kass NE. An ethics framework for public health. *Am J Public Health*. 2001;91(11):1776–82.
- Schröder-Bäck P, Duncan P, Sherlaw W, Brall C, Czabanowska K. Teaching seven principles for public health ethics: towards a curriculum for a short course on ethics in public health programmes. *BMC Med Ethics*. 2014;15(1):73.
- Moris D, Schizas D. Lockdown during COVID-19: the Greek success. *In Vivo*. 2020;34(3 suppl):1695–9.
- Krishnan S, Deo S, Manurkar S. 50 Days of Lockdown: Measuring India's Success in Arresting COVID-19. 2020.
- Madhi SA, Gray GE, Ismail N, Izu A, Mendelson M, Cassim N, et al. COVID-19 lockdowns in low-and middle-income countries: success against COVID-19 at the price of greater costs. *SAMJ*. 2020;110(8):724–6.
- Leal Filho W, Brandli LL, Lange Salvia A, Rayman-Bacchus L, Platje J. COVID-19 and the UN sustainable development goals: threat to solidarity or an opportunity? *Sustainability*. 2020;12(13):5343.
- Marmot M. The solid facts: the social determinants of health. *Health Promot J Aust*. 1999;9(2):133.
- World Health Organisation. Health inequities and their causes: Worlds Health Organisation; February 2018 [Available from: <https://www.who.int/news-room/facts-in-pictures/detail/health-inequities-and-their-causes#:~:text=Health%20inequities%20are%20differences%20in,%2C%20live%2C%20work%20and%20age>].
- Atalan A. Is the lockdown important to prevent the COVID-9 pandemic? Effects on psychology, environment and economy-perspective. *Ann Med Surg (Lond)*. 2020;56:38–42.
- Alvarez FE, Argente D, Lippi F. A simple planning problem for covid-19 lockdown. Cambridge: National Bureau of Economic Research; 2020. Report No.: 26981.
- Lau H, Khosrawipour V, Kocbach P, Mikolajczyk A, Schubert J, Bania J, et al. The positive impact of lockdown in Wuhan on containing the COVID-19 outbreak in China. *J Travel Med*. 2020;27(3):037.
- Pieh C, Budimir S, Probst T. The effect of age, gender, income, work, and physical activity on mental health during coronavirus disease (COVID-19) lockdown in Austria. *J Psychosom Res*. 2020;136:110186.
- Hamadani JD, Hasan MI, Baldi AJ, Hossain SJ, Shiraji S, Bhuiyan MSA, et al. Immediate impact of stay-at-home orders to control COVID-19 transmission on socioeconomic conditions, food insecurity, mental health, and intimate partner violence in Bangladeshi women and their families: an interrupted time series. *Lancet Glob Health*. 2020;8(11):E1380–9.
- García-Álvarez L, de la Fuente-Tomás L, García-Portilla MP, Sáiz PA, Lacasa CM, Dal Santo F, et al. Early psychological impact of the 2019 coronavirus disease (COVID-19) pandemic and lockdown in a large Spanish sample. *J Glob Health*. 2020;10(2):020505.
- Fontanesi L, Marchetti D, Mazza C, Di Giandomenico S, Roma P, Verrocchio MC. The effect of the COVID-19 lockdown on parents: a call to adopt urgent measures. *Psychological trauma: theory, research, practice, and policy*. 2020;12(S1):S79–81.
- Lee K, Sahai H, Baylis P, Greenstone M. Job Loss and Behavioral Change: The Unprecedented Effects of the India Lockdown in Delhi. Chicago: Becker Friedman Institute for Research In Economics, University of Chicago; 2020. Contract No.: 2020-65.
- Galandra C, Cerami C, Santi GC, Dodich A, Cappa SF, Vecchi T, et al. Job loss and health threatening events modulate risk-taking behaviours in the Covid-19 emergency. *Sci Rep*. 2020;10(1):1–10.
- Dang AK, Le XTT, Le HT, Tran BX, Do TTT, Phan HTB, et al. Evidence of COVID-19 impacts on occupations during the first Vietnamese national lockdown. *Ann Glob Health*. 2020;86(1):112.
- Duman A. Wage losses and inequality in developing countries: labor market and distributional consequences of Covid-19 lockdowns in Turkey. 2020. Available at SSRN 3645468.
- Singh G, Singh A, Zaidi S, Sharma S. A study on mental health and well-being of individuals amid COVID-19 pandemic lockdown. *Mukt Shabd J ISSN*. 2020(2347–3150).
- Fullana MA, Hidalgo-Mazzei D, Vieta E, Radua J. Coping behaviors associated with decreased anxiety and depressive symptoms during the COVID-19 pandemic and lockdown. *J Affect Disord*. 2020;275:80–1.

31. Burhamah W, AlKhayyat A, Oroszlányová M, AlKenane A, Almansouri A, Behbehani M, et al. The psychological burden of the COVID-19 pandemic and associated lockdown measures: experience from 4000 participants. *J Affect Disord*. 2020;277:977–85.
32. Pieh C, O'Rourke T, Budimir S, Probst T. Relationship quality and mental health during COVID-19 lockdown. *Plos One*. 2020;15(9):e0238906.
33. Rossi R, Socci V, Talevi D, Mensi S, Niolu C, Pacitti F, et al. COVID-19 pandemic and lockdown measures impact on mental health among the general population in Italy. *Front Psych*. 2020;11:790.
34. Guessoum SB, Lachal J, Radjack R, Carretier E, Minassian S, Benoit L, et al. Adolescent psychiatric disorders during the COVID-19 pandemic and lockdown. *Psychiatry research*. 2020;113264.
35. Brådvik L. Suicide risk and mental disorders. *Int J Environ Res Public Health*. 2018;15(9):2028.
36. Fazel S, Wolf A, Larsson H, Mallett S, Fanshawe TR. The prediction of suicide in severe mental illness: development and validation of a clinical prediction rule (OxMIS). *Transl Psychiatry*. 2019;9(1):1–10.
37. Phillipou A, Meyer D, Neill E, Tan EJ, Toh WL, Van Rheenen TE, et al. Eating and exercise behaviors in eating disorders and the general population during the COVID-19 pandemic in Australia: Initial results from the COLLATE project. *Int J Eating Disorders*. 2020;53(7):1158–65.
38. Brown S, Opitz M-C, Peebles AI, Sharpe H, Duffy F, Newman E. A qualitative exploration of the impact of COVID-19 on individuals with eating disorders in the UK. *Appetite*. 2020:104977.
39. Jiao WY, Wang LN, Liu J, Fang SF, Jiao FY, Pettoello-Mantovani M, et al. Behavioral and emotional disorders in children during the COVID-19 epidemic. *J Pediatr*. 2020;221:264.
40. Zhang J, Shuai L, Yu H, Wang Z, Qiu M, Lu L, et al. Acute stress, behavioural symptoms and mood states among school-age children with attention-deficit/hyperactive disorder during the COVID-19 outbreak. *Asian J Psychiatry*. 2020;51: 102077.
41. Mazza C, Ricci E, Marchetti D, Fontanesi L, Digiandomenico S, Verrocchio MC, et al. How personality relates to distress in parents during the Covid-19 lockdown: the mediating role of child's emotional and behavioral difficulties and the moderating effect of living with other people. *Int J Environ Res Public Health*. 2020;17(17):6236.
42. Webb L. Covid-19 lockdown: a perfect storm for older people's mental health. *J Psychiatr Ment Health Nurs*. 2020;28(2):300.
43. Sun J, Shi Z, Xu H. Non-pharmaceutical interventions used for COVID-19 had a major impact on reducing influenza in China in 2020. *J Travel Med*. 2020;27(8):taaa064.
44. Cowling BJ, Ali ST, Ng TW, Tsang TK, Li JC, Fong MW, et al. Impact assessment of non-pharmaceutical interventions against coronavirus disease 2019 and influenza in Hong Kong: an observational study. *Lancet Public Health*. 2020;5(5):e279–88.
45. Lei H, Xu M, Wang X, Xie Y, Du X, Chen T, et al. Nonpharmaceutical interventions used to control COVID-19 reduced seasonal influenza transmission in China. *J Infect Dis*. 2020;222(11):1780–3.
46. Tan J, Conceicao E, Sim X, Wee L, Aung M, Venkatachalam I. Public health measures during COVID-19 pandemic reduced hospital admissions for community respiratory viral infections. *J Hosp Infect*. 2020;106(2):387–9.
47. Liu S, Dun Y, Jeffrey RG, Zhou N, You B, Li Q, et al. COVID-19 induced stress, lifestyle changes and weight-gain in youth during a 4-month lockdown: a prospective cohort study. 2020.
48. Nolan S, Rumi SK, Anderson C, David K, Salim FD. Exploring the Impact of COVID-19 Lockdown on Social Roles and Emotions while Working from Home. *arXiv preprint arXiv:2007.12353*. 2020.
49. Morelli M, Cattelino E, Baiocco R, Trumello C, Babore A, Candelori C, et al. Parents and children during the COVID-19 lockdown: the influence of parenting distress and parenting self-efficacy on children's emotional well-being. *Front Psychol*. 2020;11:2584.
50. Crayne MP. The traumatic impact of job loss and job search in the aftermath of COVID-19. *Psychological Trauma: Theory, Research, Practice and Policy*. 2020.
51. Williams AE. COVID-19 and the hidden cost of reduced civil liberties. 2020.
52. Basu S, Karmakar A, Bidhan V, Kumar H, Brar K, Pandit M, et al. Impact of lockdown due to COVID-19 outbreak: lifestyle changes and public health concerns in India. *Int J Indian Psychol*. 2020;8(2):1385–411.
53. Siddiqui SA, Jakaria M. Lockdown leading obesity and its possible impacts on the second wave of COVID-19. *Bangladesh J Med Sci*. 2020;101:S2.
54. Pellegrini M, Ponzo V, Rosato R, Scumaci E, Goitre I, Benso A, et al. Changes in weight and nutritional habits in adults with obesity during the "lockdown" period caused by the COVID-19 virus emergency. *Nutrients*. 2020;12(7):2016.
55. Neill E, Meyer D, Toh WL, van Rheenen TE, Phillipou A, Tan EJ, et al. Alcohol use in Australia during the early days of the COVID-19 pandemic: Initial results from the COLLATE project. *Psychiatry Clin Neurosci*. 2020;74(10):542–9.
56. Kim JU, Majid A, Judge R, Crook P, Nathwani R, Selvapatt N, et al. Effect of COVID-19 lockdown on alcohol consumption in patients with pre-existing alcohol use disorder. *The Lancet Gastroenterology & Hepatology*. 2020;5(10):886–7.
57. Stockwell T, Andreasson S, Cherpitel C, Chikritzhs T, Dangard F, Holder H, et al. The burden of alcohol on health care during COVID-19. *Drug Alcohol Rev*. 2020;40(1):3–7.
58. Sidor A, Rzymiski P. Dietary choices and habits during COVID-19 lockdown: experience from Poland. *Nutrients*. 2020;12(6):1657.
59. Hernigou J, Morel X, Callewier A, Bath O, Hernigou P. Staying home during "COVID-19" decreased fractures, but trauma did not quarantine in one hundred and twelve adults and twenty eight children and the "tsunami of recommendations" could not lockdown twelve elective operations. *Int Orthop*. 2020:1.
60. Baxter I, Hancock G, Clark M, Hampton M, Fishlock A, Widnall J, et al. Paediatric orthopaedics in lockdown: a study on the effect of the SARS-Cov-2 pandemic on acute paediatric orthopaedics and trauma. *Bone & Joint Open*. 2020;1(7):424–30.
61. Elhalawany AS, Beastall J, Cousins G. The impact of the COVID-19 lockdown on orthopaedic emergency presentations in a remote and rural population. *Bone Jt Open*. 2020;1(10):621–7.
62. Saladié Ó, Bustamante E, Gutiérrez A. COVID-19 lockdown and reduction of traffic accidents in Tarragona province Spain. *Transp Res Interdiscip Perspect*. 2020;8: 100218.
63. Qureshi AI, Huang W, Khan S, Lobanova I, Siddiq F, Gomez CR, et al. Mandated societal lockdown and road traffic accidents. *Accid Anal Prev*. 2020;146: 105747.
64. Dewitte M, Otten C, Walker L. Making love in the time of corona—considering relationships in lockdown. *Nat Rev Urol*. 2020:1–7.
65. Günther-Bel C, Vilaregut A, Carratala E, Torras-Garat S, Pérez-Testor C. A mixed-method study of individual, couple, and parental functioning during the State-regulated COVID-19 lockdown in Spain. *Fam Process*. 2020;59(3):1060–79.
66. Günther-Bel C, Vilaregut A, Carratala E, Torras-Garat S, Pérez-Testor C. Couple and family relations early in the State-regulated Lockdown during the COVID-19 Pandemic in Spain: an exploratory mixed-methods study. 2020.
67. Ekweonu CL. Newspaper coverage of domestic violence against women during COVID-19 lockdown. *Nnamdi Azikiwe Univ J of Com Media Stud*. 2020;1(2).
68. Malathesh BC, Das S, Chatterjee SS. COVID-19 and domestic violence against women. *Asian J Psychiatry*. 2020;53:102227.
69. Piquero AR, Riddell JR, Bishopp SA, Narvey C, Reid JA, Piquero NL. Staying home, staying safe? A short-term analysis of COVID-19 on Dallas domestic violence. *Am J Crim Justice*. 2020;45(4):601–35.
70. Pfitzner N, Fitz-Gibbon K, True J. Responding to the 'shadow pandemic': practitioner views on the nature of and responses to violence against women in Victoria, Australia during the COVID-19 restrictions. 2020.
71. Gunnell D, Appleby L, Arensman E, Hawton K, John A, Kapur N, et al. Suicide risk and prevention during the COVID-19 pandemic. *The Lancet Psychiatry*. 2020;7(6):468–71.
72. Smarius LJ, Strieder TG, Doreleijers TA, Vrijkotte TG, Zafarmand MH, de Rooij SR. Maternal verbal aggression in early infancy and child's internalizing symptoms: interaction by common oxytocin polymorphisms. *Eur Arch Psychiatry Clin Neurosci*. 2020;270(5):541–51.
73. Pozzi E, Simmons JG, Bousman CA, Vijayakumar N, Bray KO, Dandash O, et al. The influence of maternal parenting style on the neural correlates of emotion processing in children. *J Am Acad Child Adolesc Psychiatry*. 2020;59(2):274–82.

74. Justine Landis-Hanley. Post-lockdown divorce: jump in number of Australian couples seeking help: Guardian News and Media Limited; 2020. Available from: <https://www.theguardian.com/australia-news/2020/jun/18/post-lockdown-divorce-jump-in-number-of-australian-couples-seeking-help>.
75. Craig L, Churchill B. Dual-earner parent couples' work and care during COVID-19. *Gender Work Org.* 2021;28(S1):66–79.
76. Farré L, Fawaz Y, González L, Graves J. How the covid-19 lockdown affected gender inequality in paid and unpaid work in Spain. 2020.
77. Landivar LC, Ruppner L, Scarborough WJ, Collins C. <? covid19?> early signs indicate that COVID-19 is exacerbating gender inequality in the labor force. *Socius.* 2020;6:2378023120947997.
78. Biroli P, Bosworth S, Della Giusta M, Di Girolamo A, Jaworska S, Vollen J, editors. *Family life in lockdown.* 2020.
79. Romero E, López-Romero L, Domínguez-Álvarez B, Villar P, Gómez-Fraguela JA. Testing the effects of COVID-19 confinement in Spanish children: the role of parents' distress, emotional problems and specific parenting. *Int J Environ Res Public Health.* 2020;17(19):6975.
80. Dwivedi LK, Rai B, Shukla A, Dey T, Ram U, Shekhar C, et al. Assessing the Impact of Complete Lockdown on COVID-19 Infections in India and its Burden on Public Health Facilities. Mumbai: IIPS; 2020.
81. Davies NG, Kucharski AJ, Eggo RM, Gimma A, Edmunds WJ, Jombart T, et al. Effects of non-pharmaceutical interventions on COVID-19 cases, deaths, and demand for hospital services in the UK: a modelling study. *Lancet Public Health.* 2020;5(7):E375–85.
82. Nikolopoulos K, Punia S, Schäfers A, Tsinopoulos C, Vasilakis C. Forecasting and planning during a pandemic: COVID-19 growth rates, supply chain disruptions, and governmental decisions. *Euro J Oper Res.* 2020;290(1):99–115.
83. Karatayev VA, Anand M, Bauch CT. Local lockdowns outperform global lockdown on the far side of the COVID-19 epidemic curve. *Proc Natl Acad Sci.* 2020;117(39):24575–80.
84. Deepthi R, Mendagudli RR, Kundapur R, Modi B. Primary health care and COVID-19 pandemic. *Int J Health Syst and Implement Res.* 2020;4(1):20–9.
85. Sheridan Rains L, Johnson S, Barnett P, Steare T, Needle JJ, Carr S, et al. Early impacts of the COVID-19 pandemic on mental health care and on people with mental health conditions: framework synthesis of international experiences and responses. *Soc Psychiatry Psychiatr Epidemiol.* 2021;56(1):13–24.
86. Chevanec A, Gourion D, Hoertel N, Llorca P-M, Thomas P, Bocher R, et al. Ensuring mental health care during the SARS-CoV-2 epidemic in France: a narrative review. *L'encephale.* 2020;46(3):193–201.
87. Dellagiulia A, Lionetti F, Fasolo M, Verderame C, Sperati A, Alessandri G. Early impact of COVID-19 lockdown on children's sleep: a 4-week longitudinal study. *J Clin Sleep Med.* 2020;16(9):1639–40.
88. Dutta K, Mukherjee R, Sen D, Sahu S. Effect of COVID-19 lockdown on sleep behavior and screen exposure time: an observational study among Indian school children. *Bio Rhythm Res.* 2020;53(4):628–39.
89. Muhammad DG, Abubakar IA. COVID-19 lockdown may increase cardiovascular disease risk factors. *Egypt Heart J.* 2021;73(1):1–3.
90. Lim MA, Huang I, Yonas E, Vania R, Pranata R. A wave of non-communicable diseases following the COVID-19 pandemic. *Diabetes Metab Syndr.* 2020;14(5):979.
91. Palmer K, Monaco A, Kivipelto M, Onder G, Maggi S, Michel J-P, et al. The potential long-term impact of the COVID-19 outbreak on patients with non-communicable diseases in Europe: consequences for healthy ageing. *Aging Clin Exp Res.* 2020;32(7):1189–94.
92. Hedermann G, Hedley PL, Baekvad-Hansen M, Hjalgrim H, Rostgaard K, Poorisrisak P, et al. Danish premature birth rates during the COVID-19 lockdown. *Archives of Disease in Childhood - Fetal and Neonatal Edition.* 2020;106:93–5.
93. Philip RK, Purtill H, Reidy E, Daly M, Imcha M, McGrath D, et al. Unprecedented reduction in births of very low birth weight (VLBW) and extremely low birthweight (ELBW) infants during the COVID-19 lockdown in Ireland: a 'natural experiment' allowing analysis of data from the prior two decades. *BMJ Global Health.* 2020;5:e003075.
94. Chow EP, Hocking JS, Ong JJ, Phillips TR, Fairley CK. Postexposure prophylaxis during COVID-19 lockdown in Melbourne Australia. *Lancet HIV.* 2020;7(8):e528–9.
95. Coombe J, Kong F, Bittleston H, Williams H, Tomnay J, Vaisey A, et al. Love during lockdown: findings from an online survey examining the impact of COVID-19 on the sexual health of people living in Australia. *Sex Transm Infect.* 2020;97:357–62.
96. Robertson T, Carter ED, Chou VB, Stegmuller AR, Jackson BD, Tam Y, et al. Early estimates of the indirect effects of the COVID-19 pandemic on maternal and child mortality in low-income and middle-income countries: a modelling study. *Lancet Glob Health.* 2020;8(7):e901–8.
97. Füzéki E, Groneberg DA, Banzer W. Physical activity during COVID-19 induced lockdown: recommendations. *J Occup Med Toxicol.* 2020;15(1):25.
98. Bera B, Bhattacharjee S, Shit PK, Sengupta N, Saha S. Significant impacts of COVID-19 lockdown on urban air pollution in Kolkata (India) and amelioration of environmental health. *Environ Dev Sustain.* 2020;23:6913–40.
99. Dantas G, Siciliano B, França BB, da Silva CM, Arbilla G. The impact of COVID-19 partial lockdown on the air quality of the city of Rio de Janeiro Brazil. *Sci Total Environ.* 2020;729: 139085.
100. Muhammad S, Long X, Salman M. COVID-19 pandemic and environmental pollution: a blessing in disguise? *Sci Total Environ.* 2020;728:138820.
101. Sills J, Adyel TM. Accumulation of plastic waste during COVID-19. *Sci-ence.* 2020;369(6509):1314–5.
102. Hossain MM, Tasnim S, Sultana A, Faizah F, Mazumder H, Zou L, et al. Epidemiology of mental health problems in COVID-19: a review. *F1000Research.* 2020;9:636.
103. Banks J, Xu X. The mental health effects of the first two months of lockdown and social distancing during the Covid-19 pandemic in the UK. *IFS Working Papers;* 2020.
104. Shankar A, McMunn A, Banks J, Steptoe A. Loneliness, social isolation, and behavioral and biological health indicators in older adults. *Health Psychol.* 2011;30(4):377.
105. Thakur K, Kumar N, Sharma N. Effect of the pandemic and lockdown on mental health of children. *Ind J Pediatr.* 2020;87:552.
106. Ainamani HE, Gumisiriza N, Rukundo GZ. Mental health problems related to COVID-19: a call for psychosocial interventions in Uganda. *Psychol Trauma Theory Res Pract Policy.* 2020;12(7):809.
107. Simon J, Helter TM, White RG, van der Boor C, Łaszewska A. Impacts of the Covid-19 lockdown and relevant vulnerabilities on capability well-being, mental health and social support: an Austrian survey study. *BMC Public Health.* 2021;21(1):314.
108. Codagnone C, Bogliacino F, Gómez C, Charris R, Montealegre F, Liva G, et al. Assessing concerns for the economic consequence of the COVID-19 response and mental health problems associated with economic vulnerability and negative economic shock in Italy, Spain, and the United Kingdom. *PLoS ONE.* 2020;15(10): e0240876.
109. Xiong J, Lipsitz O, Nasri F, Lui LMW, Gill H, Phan L, et al. Impact of COVID-19 pandemic on mental health in the general population: a systematic review. *J Affect Disord.* 2020;277:55–64.
110. McLachlan KJ, Gale CR. The effects of psychological distress and its interaction with socioeconomic position on risk of developing four chronic diseases. *J Psychosom Res.* 2018;109:79–85.
111. Anisman H, Hayley S, Kusnecov A. Chapter 16 - Comorbidities in Relation to Inflammatory Processes. In: Anisman H, Hayley S, Kusnecov A, editors. *The Immune System and Mental Health.* San Diego: Academic Press; 2018. p. 517–53.
112. Kessler R, Mroczek D. An update of the development of mental health screening scales for the US National Health Interview Study. Ann Arbor: University of Michigan, Survey Research Center of the Institute for Social Research; 1992.
113. Dohrenwend BP, Shrout PE, Egri G, Mendelsohn FS. Nonspecific psychological distress and other dimensions of psychopathology: measures for use in the general population. *Arch Gen Psychiatry.* 1980;37(11):1229–36.
114. Marchand A, Demers A, Durand P. Do occupation and work conditions really matter? A longitudinal analysis of psychological distress experiences among Canadian workers. *Sociol Health Illn.* 2005;27(5):602–27.
115. Marchand A, Blanc M-E. Occupation, work organisation conditions and the development of chronic psychological distress. *Work.* 2011;40:425–35.

116. Sturgeon JA, Arewasikporn A, Okun MA, Davis MC, Ong AD, Zautra AJ. The psychosocial context of financial stress: implications for inflammation and psychological health. *Psychosom Med*. 2016;78(2):134–43.
117. Malhotra S, Shah R. Women and mental health in India: an overview. *Indian J Psychiatry*. 2015;57(Suppl 2):S205–11.
118. Brisbane HP. Royal Commission into Victoria's Mental Health System Submission by GROW. 2019.
119. Bond A, Van de Velde S, Vilagut G, De Graaf R, Florescu S, Alonso J, et al. Gender differences in mental disorders and suicidality in Europe: results from a large cross-sectional population-based study. *J Affect Disord*. 2015;173:245–54.
120. Seedat S, Scott KM, Angermeyer MC, Berglund P, Bromet EJ, Brugha TS, et al. Cross-national associations between gender and mental disorders in the world health organization world mental health surveys. *Arch Gen Psychiatry*. 2009;66(7):785–95.
121. Riecher-Rössler A. Sex and gender differences in mental disorders. *The Lancet Psychiatry*. 2017;4(1):8–9.
122. Riecher-Rössler A. Prospects for the classification of mental disorders in women. *Eur Psychiatry*. 2010;25(4):189–96.
123. Yu S. Uncovering the hidden impacts of inequality on mental health: a global study. *Transl Psychiatry*. 2018;8(1):98.
124. Heitner KL, McCluer JA. Women and work during the COVID-19 global pandemic: challenges, intersectionality, and opportunities. In: Multi-disciplinary approach to diversity and inclusion in the COVID-19-Era workplace: IGI Global. 2022. p. 262–80.
125. Baum F. *The new public health*: Oxford University Press. 2016.
126. Detels R, Gulliford M, Karim QA, Tan CC. *Oxford textbook of global public health*: Oxford Textbook. 2015.
127. Parker K, Funk C. Gender discrimination comes in many forms for today's working women: Pew Research Center; 2017 [updated 2017-12-14]. Available from: <https://policycommons.net/artifacts/617535/gender-discrimination-comes-in-many-forms-for-todays-working-women/>.
128. Steelfisher GK, Findling MG, Bleich SN, Casey LS, Blendon RJ, Benson JM, et al. Gender discrimination in the United States: experiences of women. *Health Serv Res*. 2019;54:1442–53.
129. Sila U, Dugain V. Income, wealth and earnings inequality in Australia: evidence from the HILDA survey. 2019.
130. Pacalda CAN, Nailon MY, Vibar JA, Cobrado JB, Brian RSL, Galigao RP. Gender inequalities in the context of basic education: a literature review. 2020.
131. Beddoes K, Schimpf C. What's wrong with fairness? How discourses in higher education literature support gender inequalities. *Discourse*. 2014;39(1):31–40.
132. Hyde JS, Mezulis AH. Gender differences in depression: biological, affective, cognitive, and sociocultural factors. *Harv Rev Psychiatry*. 2020;28(1):4–13.
133. Webster K, Diemer K, Honey N, Mannix S, Mickle J, Morgan J, et al. Australians' attitudes to violence against women and gender equality: Australia's national research organisation for women's safety. 2018.
134. Willie TC, Kershaw TS. An ecological analysis of gender inequality and intimate partner violence in the United States. *Prev Med*. 2019;118:257–63.
135. Kavanagh S, Graham M. How Gender Inequity Impacts on Men's Health. An Exploration of Theoretical Pathways. *Int J Mens Soc Comm Health*. 2019;2(1):e11–21.
136. Harris-Roxas BF, Harris PJ, Harris E, Kemp LA. A rapid equity focused health impact assessment of a policy implementation plan: an Australian case study and impact evaluation. *Int J Equity Health*. 2011;10(1):6.
137. Mahoney M, Simpson S, Harris E, Aldrich R, Stewart-Williams J. Equity-focused health impact assessment framework. 2004.
138. Simpson S, Mahoney M, Harris E, Aldrich R, Stewart WJ. Equity-focused health impact assessment: a tool to assist policy makers in addressing health inequalities. *Environ Impact Assess Rev*. 2005;25:772–82.
139. Cave B, Kim J, Viliani F, Harris P. Applying an equity lens to urban policy measures for COVID-19 in four cities. *Cities Health*. 2020;5(1):s66–70.
140. O'Neill J, Tabish H, Welch V, Petticrew M, Pottie K, Clarke M, et al. Applying an equity lens to interventions: using PROGRESS ensures consideration of socially stratifying factors to illuminate inequities in health. *J Clin Epidemiol*. 2014;67(1):56–64.
141. Public Health Commander. Stay at Home Directions (Restricted Areas) (NO 7) Victoria: Victoria State Government; 2020 [Available from: <https://www.dhhs.vic.gov.au/sites/default/files/documents/202008/Stay%20at%20Home%20Directions%20%28Restricted%20Areas%29%20%28No%207%29%20-%202020August%202020.pdf>].
142. Statement on changes to Melbourne's Restrictions [press release]. Victoria: Victoria State Government. 2 Aug 2020.
143. Statement on changes to Regional Restrictions [press release]. Victoria: Victoria State Government. 2 Aug 2020.
144. Public Health Commander. Stay at Home Directions (Restricted Areas) (NO 8) Victoria: Victoria State Government. 2020. [Available from: <https://www.dhhs.vic.gov.au/sites/default/files/documents/202008/Stay%20at%20Home%20Directions%20%28Restricted%20Areas%29%20%28No%208%29-06082020.pdf>].
145. Public Health Commander. Stay at Home Directions (Restricted Areas) (NO 11) Victoria: Victoria State Government. 2020. [Available from: <https://www.dhhs.vic.gov.au/sites/default/files/documents/202008/Stay%20at%20Home%20Directions%20%28Restricted%20Areas%29%20%28No%2011%29%20-%2013%20August%202020.pdf>].
146. Public Health Commander. Stay at Home Directions (Restricted Areas) (NO 12) Victoria: Victoria State Government. 2020. [Available from: <https://www.dhhs.vic.gov.au/sites/default/files/documents/202008/Stay%20at%20Home%20Directions%20%28Restricted%20Areas%29%20%28No%2012%29%20-%2016%20August%202020.pdf>].
147. Public Health Commander. Stay at Home Directions (Restricted Areas) (NO 13) Victoria: Victoria State Government. 2020. [Available from: <https://www.dhhs.vic.gov.au/sites/default/files/documents/202008/Stay%20at%20Home%20Directions%20%28Restricted%20Area%29%20%28No%2013%29.pdf>].
148. Public Health Commander. Stay at Home Directions (Restricted Areas) (NO 14) Victoria: Victoria State Government. 2020. [Available from: <https://www.dhhs.vic.gov.au/sites/default/files/documents/202008/Stay%20at%20Home%20Directions%20%28Restricted%20Areas%29%20%28No%2014%29%20.pdf>].
149. Public Health Commander. Stay at Home Directions (Restricted Areas) (NO 15) Victoria: Victoria State Government. 2020. [Available from: <https://www.dhhs.vic.gov.au/sites/default/files/documents/202009/Stay%20at%20Home%20Directions%20%28Restricted%20Areas%29%20%28No%2015%29%20signed%20>].
150. Public Health Commander. Stay at Home Directions (Restricted Areas) (NO 10) Victoria: Victoria State Government. 2020. [Available from: https://www.dhhs.vic.gov.au/sites/default/files/documents/202008/Stay%20at%20Home%20Directions%20%28Restricted%20Areas%29%20%28No%2010%29%20-%2008%20August%202020signed_0.pdf].
151. Chief Health Officer. Stay at Home Directions (Restricted Areas) (NO 16) Victoria: Victoria State Government. 2020. [Available from: <https://www.dhhs.vic.gov.au/sites/default/files/documents/202009/Stay%20at%20Home%20Directions%20%28Restricted%20Areas%29%20%28No%2016%29%20signed%2027%20Sept.pdf>].
152. Chief Health Officer. Stay at Home Directions (Restricted Areas) (NO 17) Victoria: Victoria State Government. 2020. [Available from: <https://www.dhhs.vic.gov.au/sites/default/files/documents/202010/Stay%20at%20Home%20Directions%20%28Restricted%20Areas%29%20%28No%2017%29%20-%20signed>].
153. Chief Health Officer. Stay at Home Directions (Restricted Areas) (NO 19) Victoria: Victoria State Government. 2020. [Available from: https://www.dhhs.vic.gov.au/sites/default/files/documents/202010/Stay%20at%20Home%20Directions%20%28Restricted%20Areas%29%20%28No%2019%29%20-%2018%20October%202020_0.pdf].
154. Deputy Chief Health Officer. Stay at Home Directions Victoria: Victoria State Government. 2020. [Available from: <https://www.dhhs.vic.gov.au/sites/default/files/documents/202003/Stay%20at%20Home%20Directions%20.pdf>].
155. Deputy Chief Health Officer. Stay at Home Directions (No 2) Victoria: Victoria State Government. 2020. [Available from: <https://www.dhhs.vic.gov.au/sites/default/files/documents/202004/Stay%20at%20Home%20Directions%20%28No%202%29%20-%20signed.pdf>].
156. Deputy Chief Health Officer. Stay at Home Directions (No 3) Victoria: Victoria State Government. 2020. [Available from: <https://www.dhhs.vic.gov.au/sites/default/files/documents/202004/Direction%20-%20Stay%20at%20Home%20No.3%20%28signed%29.pdf>].
157. Deputy Chief Health Officer. Stay at Home Directions (No 4) Victoria: Victoria State Government. 2020. [Available from: <https://www.dhhs.vic>].

- gov.au/sites/default/files/documents/202004/b4%20-%20stay%20at%20home%20direction%20%28no%204%29%20%28signed%29.pdf.
158. Deputy Chief Health Officer. Stay at Home Directions (No 6) Victoria: Victoria State Government. 2020. [Available from: <https://www.dhhs.vic.gov.au/sites/default/files/documents/202005/directions-stay-at-home-no-6-signed-2020-05-11.pdf>].
 159. Deputy Chief Health Officer. Stay at Home Directions (No 7) Victoria: Victoria State Government. 2020. [Available from: <https://www.dhhs.vic.gov.au/sites/default/files/documents/202005/Stay%20at%20Home%20Directions%20No%207%2024%20May%202020.pdf>].
 160. Chief Health Officer. Stay at Home Directions (Victoria) (No 5) Victoria: Victoria State Government. 2021. [Available from: [https://www.dhhs.vic.gov.au/sites/default/files/documents/202108/Stay%20at%20Home%20Directions%20\(Victoria\)%20\(No%205\)%20-%2021%20August%202021.pdf](https://www.dhhs.vic.gov.au/sites/default/files/documents/202108/Stay%20at%20Home%20Directions%20(Victoria)%20(No%205)%20-%2021%20August%202021.pdf)].
 161. Acting Chief Health Officer. Stay at Home Directions (Victoria) (No 8) Victoria: Victoria State Government. 2021. [Available from: <https://www.dhhs.vic.gov.au/sites/default/files/documents/202109/stay-at-home-directions-%28victoria%29-%28no-8%29.pdf>].
 162. Chief Health Officer. Stay at Home Directions (Victoria) (No 6) Victoria: Victoria State Government. 2021. [Available from: <https://www.dhhs.vic.gov.au/sites/default/files/documents/202108/Stay-at-Home-Directions%20%28Victoria%29%20%28No%206%29%2022%20August%202021.pdf>].
 163. Acting Chief Health Officer. Stay at Home Directions (Victoria) (No 7) Victoria: Victoria State Government. 2021. [Available from: <https://www.dhhs.vic.gov.au/sites/default/files/documents/202108/Stay%20at%20Home%20Directions%20%28Victoria%29%20%28No%207%29%20.pdf>].
 164. Acting Chief Health Officer. Stay at Home Directions (Restricted Areas) (No 22) Victoria: Victoria State Government. 2021. [Available from: <https://www.dhhs.vic.gov.au/sites/default/files/documents/202109/Stay%20at%20Home%20Directions%20%28Restricted%20Areas%29%20%28No%2022%29%20.pdf>].
 165. Acting Chief Health Officer. Stay at Home Directions (Restricted Areas) (No 23) Victoria: Victoria State Government. 2021. [Available from: <https://www.dhhs.vic.gov.au/sites/default/files/documents/202109/stay-at-home-directions-restricted-areas-no-23.pdf>].
 166. Acting Chief Health Officer. Stay at Home Directions (Restricted Areas) (No 21) Victoria: Victoria State Government. 2021. [Available from: <https://www.dhhs.vic.gov.au/sites/default/files/documents/202109/Stay-at-Home-Directions-%28Restricted-Areas%29-%28No-21%29-15-september-2021.pdf>].
 167. Acting Chief Health Officer. Stay at Home Directions (Restricted Areas) (No 20) Victoria: Victoria State Government. 2021. Available from: <https://www.dhhs.vic.gov.au/sites/default/files/documents/202109/Stay%20at%20Home%20Directions%20%28Restricted%20Area%29%20%28No%2020%29%20.pdf>.
 168. Chief Health Officer. Stay at Home Directions (Victoria) (No 5) Victoria: Victoria State Government; 2021. Available from: [https://www.dhhs.vic.gov.au/sites/default/files/documents/202108/Stay%20at%20Home%20Directions%20\(Victoria\)%20\(No%205\)%20-%2021%20August%202021.pdf](https://www.dhhs.vic.gov.au/sites/default/files/documents/202108/Stay%20at%20Home%20Directions%20(Victoria)%20(No%205)%20-%2021%20August%202021.pdf).
 169. Acting Chief Health Officer. Stay at Home Directions (Victoria) (No 8) Victoria: Victoria State Government; 2020. Available from: <https://www.dhhs.vic.gov.au/sites/default/files/documents/202109/stay-at-home-directions-%28victoria%29-%28no-8%29.pdf>.
 170. Chief Health Officer. Stay at Home Directions (Victoria) (No 6) Victoria: Victoria State Government; 2021. Available from: <https://www.dhhs.vic.gov.au/sites/default/files/documents/202108/Stay-at-Home-Directions%20%28Victoria%29%20%28No%206%29%2022%20August%202021.pdf>.
 171. Acting Chief Health Officer. Stay at Home Directions (Victoria) (No 7) Victoria: Victoria State Government; 2020. Available from: <https://www.dhhs.vic.gov.au/sites/default/files/documents/202108/Stay%20at%20Home%20Directions%20%28Victoria%29%20%28No%207%29%20.pdf>.
 172. Harris P, Harris-Roxas B, Harris E, Kemp L. Health Impact Assessment: a practical guide. Sydney: UNSW Research Centre for Primary Health Care and Equity and NSW Health; 2007.
 173. ABS. ABS Census Data. Canberra: Australian Bureau of Statistics; 2016. Available from: https://quickstats.censusdata.abs.gov.au/census_services/getproduct/census/2016/quickstat/2?opendocument.
 174. Department of Health and Human Services. Victorian Population Health Survey 2016: Selected survey findings Melbourne, Victoria: Victoria State Government. 2018. [Available from: https://www.vgls.vic.gov.au/client/en_AU/search/asset/1298997/0].
 175. Informed Decisions Community Demographic Resources. Victoria ID Population Experts: ID Population Experts. 2022. Available from: <https://profile.id.com.au/australia/about?WebID=110>. [Cited 20–23 Oct 2020]
 176. Victorian Health Promotion Foundation. VicHealth Coronavirus. Victorian wellbeing impact study. In: Health V, editor. Melbourne: Victorian Government; 2020.
 177. Lim M. Australian loneliness report: a survey exploring the loneliness levels of Australians and the impact on their health and wellbeing. Melbourne: Australian Psychological Society and Swinburne University of Technology; 2018.
 178. Hawkey LC, Cacioppo JT. Loneliness matters: a theoretical and empirical review of consequences and mechanisms. *Ann Behav Med*. 2010;40(2):218–27.
 179. Steptoe A, Shankar A, Demakakos P, Wardle J. Social isolation, loneliness, and all-cause mortality in older men and women. *Proc Natl Acad Sci*. 2013;110(15):5797–801.
 180. Stickley A, Koyanagi A. Loneliness, common mental disorders and suicidal behavior: findings from a general population survey. *J Affect Disord*. 2016;197:81–7.
 181. Ingram I, Kelly PJ, Deane FP, Baker AL, Goh MC, Raftery DK, et al. Loneliness among people with substance use problems: a narrative systematic review. *Drug Alcohol Rev*. 2020;39(5):447–83.
 182. Campagne DM. Stress and perceived social isolation (loneliness). *Arch Gerontol Geriatr*. 2019;82:192–9.
 183. Li LZ, Wang S. Prevalence and predictors of general psychiatric disorders and loneliness during COVID-19 in the United Kingdom. *Psychiatry Res*. 2020;291:113267.
 184. Heinrich LM, Gullone E. The clinical significance of loneliness: a literature review. *Clin Psychol Rev*. 2006;26(6):695–718.
 185. Liu C, Stevens C, Conrad R, Hahm H. Evidence for elevated psychiatric distress, poor sleep, and quality of life concerns during the COVID-19 pandemic among US young adults with suspected and reported psychiatric diagnoses. *Psychiatry Res*. 2020;292:113345.
 186. Leigh-Hunt N, Bagguley D, Bash K, Turner V, Turnbull S, Valtorta N, et al. An overview of systematic reviews on the public health consequences of social isolation and loneliness. *Public Health*. 2017;152:157–71.
 187. Palgi Y, Shrira A, Ring L, Bodner E, Avidor S, Bergman Y, et al. The loneliness pandemic: loneliness and other concomitants of depression, anxiety and their comorbidity during the COVID-19 outbreak. *J Affect Disord*. 2020;275:109–11.
 188. Liu S, Heinzl S, Haucke MN, Heinz A. Increased psychological distress, loneliness, and unemployment in the spread of COVID-19 over 6 months in Germany. *Medicina (Kaunas)*. 2021;57(1):53.
 189. Pancani L, Marinucci M, Aureli N, Riva P. Forced social isolation and mental health: a study on 1,006 Italians Under COVID-19 Lockdown. *Front Psychol*. 2021;12(1540):663799.
 190. Nitschke JP, Forbes P, Ali N, Cutler J, Apps MA, Lockwood P, et al. Resilience during uncertainty. In: Greater Social Connectedness During COVID-19 Lockdown is Associated with Reduced Distress and Fatigue. 2020.
 191. Niedhammer I, Bugel I, Goldberg M, Leclerc A, Guéguen A. Psychosocial factors at work and sickness absence in the Gazel cohort: a prospective study. *Occup Environ Med*. 1998;55(11):735–41.
 192. Vermeulen M, Mustard C. Gender differences in job strain, social support at work, and psychological distress. *J Occup Health Psychol*. 2000;5(4):428.
 193. Susan Maury. Undervalued and unseen: Australia's COVID-19 frontline workers: flossy digital. 2020. [Available from: <http://www.powertoper.suade.org.au/blog/undervalued-and-unseen-australias-covid-19-frontline-workforce/14/4/2020>].
 194. Gresenz CR, Sturm R, Tang L. Income and mental health: Unraveling community and individual level relationships. *J Ment Health Policy Econ*. 2001;4(4):197–204.

195. Orpana HM, Lemyre L, Gravel R. Income and psychological distress: the role of the social environment. *Health Rep.* 2009;20(1):21–8.
196. Collie A, Sheehan L, Vreden Cv, Grant G, Whiteford P, Petrie D, et al. Psychological distress among people losing work during the COVID-19 pandemic in Australia. medRxiv. 2020:2020.05.06.20093773.
197. Weich S, Lewis G. Financial strain has a major impact on mental health. *BMJ (Clinical research ed).* 1998;317(7151):115–9.
198. Weich S, Lewis G. Poverty, unemployment, and common mental disorders: population based cohort study. *BMJ (Clinical research ed).* 1998;317(7151):115–9.
199. Selenko E, Batinic B. Beyond debt. A moderator analysis of the relationship between perceived financial strain and mental health. *Soc Sci Med.* 2011;73(12):1725–32.
200. Rossell S, Neill E, Phillipou A, Tan E, Toh WL, Van Rheenen T, et al. An overview of current mental health in the general population of Australia during the COVID-19 pandemic: results from the COLLATE project. *Psychiatry Res.* 2020;296:113660.
201. Rosand GM, Slinning K, Eberhard-Gran M, Røysamb E, Tambs K. The buffering effect of relationship satisfaction on emotional distress in couples. *BMC Public Health.* 2012;12(1):66.
202. Manning C, Gregoire A. Effects of parental mental illness on children. *Psychiatry.* 2006;5(1):10–2.
203. Parfitt Y, Pike A, Ayers S. The impact of parents' mental health on parent–baby interaction: a prospective study. *Infant Behav Dev.* 2013;36(4):599–608.
204. Fitzsimons E, Goodman A, Kelly E, Smith JP. Poverty dynamics and parental mental health: determinants of childhood mental health in the UK. *Soc Sci Med.* 2017;175:43–51.
205. Beckmann L. Does parental warmth buffer the relationship between parent-to-child physical and verbal aggression and adolescent behavioral and emotional adjustment? *J Fam Stud.* 2019;27(3):366–87.
206. Crum KI, Moreland AD. Parental stress and children's social and behavioral outcomes: the role of abuse potential over time. *J Child Fam Stud.* 2017;26(11):3067–78.
207. Flouri E, Midouhas E, Joshi H, Tzavidis N. Emotional and behavioural resilience to multiple risk exposure in early life: the role of parenting. *Eur Child Adolesc Psychiatry.* 2015;24(7):745–55.
208. Finkenauer C, Engels R, Baumeister R. Parenting behaviour and adolescent behavioural and emotional problems: the role of self-control. *Int J Behav Dev.* 2005;29(1):58–69.
209. Van Rheenen TE, Meyer D, Neill E, Phillipou A, Tan EJ, Toh WL, et al. Mental health status of individuals with a mood-disorder during the COVID-19 pandemic in Australia: Initial results from the COLLATE project. *J Affect Disord.* 2020;275:69–77.
210. Biddle N, Edwards B, Gray M, Sallis K. Tracking outcomes during the COVID-19 pandemic (April 2020)–Hardship, distress, resilience. 2020. [Available from: <https://openresearch-repository.anu.edu.au/handle/1885/213194>.
211. ABS. Household impacts of COVID-19 survey. 24–29 June 2020. Insights into the prevalence and nature of impacts from COVID-19 on households in Australia. Canberra: Australian Bureau of Statistics. 2020 [updated 13/10/20. Available from: <https://www.abs.gov.au/statistics/people/people-and-communities/household-impacts-covid-19-survey/24-29-june-2020>.
212. ABS. Household impacts of COVID-19 survey. 10–15 June 2020. Insights into the prevalence and nature of impacts from COVID-19 on households in Australia. Canberra: Australian Bureau of Statistics. 2020 [updated 13/10/20. Available from: <https://www.abs.gov.au/statistics/people/people-and-communities/household-impacts-covid-19-survey/10-15-june-2020>.
213. ABS. Household impacts of COVID-19 survey. 26–29 May 2020. Insights into the prevalence and nature of impacts from COVID-19 on households in Australia. Canberra: Australian Bureau of Statistics. 2020 [updated 13/10/20. Available from: <https://www.abs.gov.au/statistics/people/people-and-communities/household-impacts-covid-19-survey/26-29-may-2020>.
214. ABS. Household impacts of COVID-19 survey. 12–15 May 2020. Insights into the prevalence and nature of impacts from COVID-19 on households in Australia. Canberra: Australian Bureau of Statistics. 2020 [updated 13/10/20. Available from: <https://www.abs.gov.au/statistics/people/people-and-communities/household-impacts-covid-19-survey/12-15-may-2020>.
215. ABS. Household impacts of COVID-19 survey. 29 April - 4 May 2020. Insights into the prevalence and nature of impacts from COVID-19 on households in Australia. Canberra: Australian Bureau of Statistics. 2020 [updated 13/10/20. Available from: <https://www.abs.gov.au/statistics/people/people-and-communities/household-impacts-covid-19-survey/29-apr-4-may-2020>.
216. ABS. Household impacts of COVID-19 survey. 14–17 April 2020. Insights into the prevalence and nature of impacts from COVID-19 on households in Australia. Canberra: Australian Bureau of Statistics. 2020 [updated 13/10/20. Available from: <https://www.abs.gov.au/statistics/people/people-and-communities/household-impacts-covid-19-survey/14-17-apr-2020>.
217. ABS. Household impacts of COVID-19 survey. 1 - 6 April 2020. Insights into the prevalence and nature of impacts from COVID-19 on households in Australia. Canberra: Australian Bureau of Statistics. 2020 [updated 13/10/20. Available from: <https://www.abs.gov.au/statistics/people/people-and-communities/household-impacts-covid-19-survey/1-6-apr-2020>.
218. ABS. Household impacts of COVID-19 survey. September 2020. Insights into the prevalence and nature of impacts from COVID-19 on households in Australia. Canberra: Australian Bureau of Statistics. 2020 [updated 13/10/20. Available from: <https://www.abs.gov.au/statistics/people/people-and-communities/household-impacts-covid-19-survey/latest-release>.
219. ABS. Household impacts of COVID-19 survey. August 2020. Insights into the prevalence and nature of impacts from COVID-19 on households in Australia. Canberra: Australian Bureau of Statistics. 2020 [updated 31/08/20. Available from: <https://www.abs.gov.au/statistics/people/people-and-communities/household-impacts-covid-19-survey/aug-2020>.
220. ABS. Household impacts of COVID-19 survey. 6 - 10 July 2020. Insights into the prevalence and nature of impacts from COVID-19 on households in Australia. Canberra: Australian Bureau of Statistics. 2020 [updated 13/10/20. Available from: <https://www.abs.gov.au/statistics/people/people-and-communities/household-impacts-covid-19-survey/6-10-july-2020>.
221. Kinsella E. As Victoria endures prolonged coronavirus lockdown, mental health workers see devastating impacts of COVID-19 [News]. ABC; 2020 [updated 2nd September 2020]. Available from: <https://www.abc.net.au/news/2020-09-02/mental-health-crisis-coronavirus-victoria-lifeline-calls-rise/12588500>.
222. Alliance WsMH. Policy brief: Impacts of COVID-19 on women's mental health and recommendations for action - update 2020. 2020.
223. Beyond Blue. New dedicated service to support Australia's mental health through COVID-19: Beyond Blue. 2020. Available from: <https://www.beyondblue.org.au/media/media-releases/media-releases/new-dedicated-service-to-support-australia-s-mental-health-through-covid-19>. [updated 8 Apr 2020; cited 2020 1/11].
224. Neal M. Good Friday was Lifeline's busiest day ever as coronavirus puts strain on mental health. . 2020 April 19, 2020.
225. McKinnon K. Healthcare workers infections dashboard. 2021. [Available from: <https://healthcareworkersaustralia.com/analytics/>.
226. Smith P. Covid-19 in Australia: most infected health workers in Victoria's second wave acquired virus at work. *BMJ.* 2020.
227. DHHS. Victorian healthcare worker coronavirus (COVID-19) data Victoria: Victorian Government. 2021. [Available from: <https://www.dhhs.vic.gov.au/victorian-healthcare-worker-covid-19-data>.
228. Buising K, Williamson D, Cowie B, MacLachlan J, Orr L, MacIsaac C, et al. A hospital-wide response to multiple outbreaks of COVID-19 in Health Care Workers Lessons learned from the field. medRxiv. 2020:2020.09.02.20186452.
229. Equity Economics. Gender-based Impacts of COVID-19. Analysis shows that Victoria's opening up favours male over female jobs. Victoria; 2020. Available from: <https://www.equityeconomics.com.au/report-archive/gender-based-impacts-of-covid-19>.
230. Institute TM. The Impact of COVID-19 on Women and Work in Victoria. 2020.
231. Richardson D, Dennis R. Gender experiences during the COVID-19 lockdown. 2020.

232. Alon TM, Doepke M, Olmstead-Rumsey J, Tertilt M. The impact of COVID-19 on gender equality. National Bureau of Economic Research; 2020. Report No.: 0898–2937.
233. Benke C, Autenrieth LK, Asselmann E, Pané-Farré CA. Lockdown, quarantine measures, and social distancing: associations with depression, anxiety and distress at the beginning of the COVID-19 pandemic among adults from Germany. *Psychiatry Res.* 2020;293:113462.
234. González-Blanco L, Dal Santo F, García-Álvarez L, de la Fuente-Tomás L, Moya Lacasa C, Paniagua G, et al. COVID-19 lockdown in people with severe mental disorders in Spain: do they have a specific psychological reaction compared with other mental disorders and healthy controls? *Schizophr Res.* 2020;223:192–8.
235. Rehman U, Shahnawaz MG, Khan NH, Kharshiing KD, Khursheed M, Gupta K, et al. Depression, anxiety and stress among Indians in times of Covid-19 lockdown. *Community Ment Health J.* 2020;57:42–8.
236. White RG, Van Der Boor C. Impact of the COVID-19 pandemic and initial period of lockdown on the mental health and well-being of adults in the UK. *BJPsych Open.* 2020;6(5): e90.
237. Serafini G, Parmigiani B, Amerio A, Aguglia A, Sher L, Amore M. The psychological impact of COVID-19 on the mental health in the general population. *QJM.* 2020;113(8):531–7.
238. Sediri S, Zgueb Y, Ouanes S, Ouali U, Bourgou S, Jomli R, et al. Women's mental health: acute impact of COVID-19 pandemic on domestic violence. *Arch Women's Ment Health.* 2020;23:749–56.
239. Pierce M, Hope H, Ford T, Hatch S, Hotopf M, John A, et al. Mental health before and during the COVID-19 pandemic: a longitudinal probability sample survey of the UK population. *The Lancet Psychiatry.* 2020;7(10):883–92.
240. Niedzwiedz CL, Green MJ, Benzeval M, Campbell D, Craig P, Demou E, et al. Mental health and health behaviours before and during the initial phase of the COVID-19 lockdown: longitudinal analyses of the UK household longitudinal study. *J Epidemiol Community Health.* 2021;75(3):224–31.
241. Ausín B, González-Sanguino C, Castellanos MÁ, Muñoz M. Gender-related differences in the psychological impact of confinement as a consequence of COVID-19 in Spain. *J Gend Stud.* 2021;30(1):29–38.
242. Etheridge B, Spantig L. The gender gap in mental well-being during the Covid-19 outbreak: evidence from the UK. ISER Working paper series. 2020.
243. Beutel ME, Hettich N, Ernst M, Schmutzer G, Tibubos AN, Braehler E. Mental health and loneliness in the German general population during the COVID-19 pandemic compared to a representative pre-pandemic assessment. *Sci Rep.* 2021;11(1):1–9.
244. Orefice S, Quintana-Domeque C. Gender inequality in COVID-19 times: evidence from UK prolific participants. *J Demogr Economics.* 2021;87(2):261–87.
245. McQuaid RJ, Cox SML, Ogunlana A, Jaworska N. The burden of loneliness: implications of the social determinants of health during COVID-19. *Psychiatry Res.* 2021;296: 113648.
246. Prowse R, Sherratt F, Abizaid A, Gabrys RL, Hellems KGC, Patterson ZR, et al. Coping with the COVID-19 pandemic: examining gender differences in stress and mental health among university students. *Front Psychiatry.* 2021;12(439):650759.
247. Bao L, Li W-T, Zhong B-L. Feelings of loneliness and mental health needs and services utilization among Chinese residents during the COVID-19 epidemic. *Glob Health.* 2021;17(1):51.
248. Jacques-Aviñó C, López-Jiménez T, Medina-Perucha L, De Bont J, Gonçalves AQ, Duarte-Salles T, et al. Gender-based approach on the social impact and mental health in Spain during COVID-19 lockdown: a cross-sectional study. *BMJ Open.* 2020;10(11): e044617.
249. Saunders R, Buckman JE, Fonagy P, Fancourt D. Understanding different trajectories of mental health across the general population during the COVID-19 pandemic. *Psychol Med.* 2021;1–9.
250. Ribeiro F, Schröder VE, Krüger R, Leist AK, Consortium CV. The evolution and social determinants of mental health during the first wave of the COVID-19 outbreak in Luxembourg. *Psychiatry research.* 2021;303:114090.
251. Alt P, Reim J, Walper S. Fall from Grace: increased loneliness and depression among extraverted youth during the German COVID-19 lockdown. *J Res Adolesc.* 2021;31(3):678–91.
252. Taniguchi Y, Miyawaki A, Tsugawa Y, Murayama H, Tamiya N, Tabuchi T. Family caregiving and changes in mental health status in Japan during the COVID-19 pandemic. *Arch Gerontol Geriatr.* 2021;98:104531.
253. Geirdal AKØ, Price D, Schoultz M, Thygesen H, Ruffolo M, Leung J, et al. The significance of demographic variables on psychosocial health from the early stage and nine months after the COVID-19 pandemic outbreak. A cross-national study. *Int J Environ Res Public Health.* 2021;18(8):4345.
254. Hapke U, Cohrdes C, Nübel J. Depressive symptoms in a European comparison—Results from the European Health Interview Survey (EHIS) 2. *J Health Monit.* 2019;4(4):57–65.
255. Andrew A, Cattan S, Costa Dias M, Farquharson C, Kraftman L, Krutikova S, et al. The gendered division of paid and domestic work under lockdown. 2020.
256. Craig L. COVID-19 has laid bare how much we value women's work, and how little we pay for it. *Conversation.* 2020;21:2020.
257. Casale D, Posel D. Gender inequality and the COVID-19 crisis: Evidence from a large national survey during South Africa's lockdown. *Research in Social Stratification and Mobility.* 2020:100569.
258. Andrew A, Cattan S, Dias MC, Farquharson C, Kraftman L, Krutikova S, et al. Inequalities in children's experiences of home learning during the COVID-19 lockdown in England. 2020.
259. Le XTT, Dang KA, Toweh J, Nguyen QN, Le HT, Toan DTT, et al. Evaluating the psychological impacts related to COVID-19 of Vietnamese people under the first nationwide partial lockdown in Vietnam. *Front Psych.* 2020;11:824.
260. Power K. The COVID-19 pandemic has increased the care burden of women and families. *Sustain: Sci, Pract Policy.* 2020;16(1):67–73.
261. ABS. Gender Indicators, Australia Canberra: Australian Government. 2020. [Available from: <https://www.abs.gov.au/statistics/people/people-and-communities/gender-indicators-australia/latest-release#data-download>].
262. Government A. Workplace gender Equality Agency. 2020. [Available from: <https://www.wgea.gov.au/topics/gendered-impact-of-covid-19>].
263. Shechter A, Diaz F, Moise N, Anstey DE, Ye S, Agarwal S, et al. Psychological distress, coping behaviors, and preferences for support among New York healthcare workers during the COVID-19 pandemic. *Gen Hosp Psychiatry.* 2020;66:1–8.
264. Grover S, Sahoo S, Mehra A, Avasthi A, Tripathi A, Subramanyan A, et al. Psychological impact of COVID-19 lockdown: an online survey from India. *Ind J Psychiatry.* 2020;62(4):354.
265. Yamamoto T, Uchiyumi C, Suzuki N, Yoshimoto J, Murillo-Rodríguez E. The psychological impact of "mild lockdown" in Japan during the COVID-19 pandemic: a nationwide survey under a declared state of emergency. *International Journal of Environmental Research and Public Health.* 2020;17(24):9382.
266. Zhang WR, Wang K, Yin L, Zhao WF, Xue Q, Peng M, et al. Mental health and psychosocial problems of medical health workers during the COVID-19 epidemic in China. *Psychother Psychosom.* 2020;89(4):242–50.
267. Lai J, Ma S, Wang Y, Cai Z, Hu J, Wei N, et al. Factors associated with mental health outcomes among health care workers exposed to coronavirus disease 2019. *JAMA Netw Open.* 2020;3(3):e203976.
268. Luceño-Moreno L, Talavera-Velasco B, García-Albuérne Y, Martín-García J. Symptoms of posttraumatic stress, anxiety, depression, levels of resilience and burnout in Spanish health personnel during the COVID-19 pandemic. *Int J Environ Res Public Health.* 2020;17(15):5514.
269. Temsah M-H, Al-Sohime F, Alamro N, Al-Eyadhy A, Al-Hasan K, Jamal A, et al. The psychological impact of COVID-19 pandemic on health care workers in a MERS-CoV endemic country. *J Infect Public Health.* 2020;13(6):877–82.
270. Blake H, Birmingham F, Johnson G, Tabner A. Mitigating the psychological impact of COVID-19 on healthcare workers: a digital learning package. *Int J Environ Res Public Health.* 2020;17(9):2997.
271. Zhu Z, Xu S, Wang H, Liu Z, Wu J, Li G, et al. COVID-19 in Wuhan: Sociodemographic characteristics and hospital support measures associated with the immediate psychological impact on healthcare workers. *EClinicalMedicine.* 2020;24: 100443.
272. De Sio S, La Torre G, Buomprisco G, Lapteva E, Perri R, Corbosiero P, et al. Consequences of COVID19-pandemic lockdown on Italian occupational physicians' psychosocial health. *PLoS ONE.* 2021;16(2): e0243194.

273. Giusti EM, Pedroli E, D'Aniello GE, Badiale CS, Pietrabissa G, Manna C, et al. The psychological impact of the COVID-19 outbreak on health professionals: a cross-sectional study. *Front Psychol*. 2020;11:1684.
274. Azoulay E, De Waele J, Ferrer R, Staudinger T, Borkowska M, Povoa P, et al. Symptoms of burnout in intensive care unit specialists facing the COVID-19 outbreak. *Ann Intensive Care*. 2020;10(1):1–8.
275. Matsuo T, Kobayashi D, Taki F, Sakamoto F, Uehara Y, Mori N, et al. Prevalence of health care worker burnout during the coronavirus disease 2019 (COVID-19) pandemic in Japan. *JAMA Netw Open*. 2020;3(8):e2017271.
276. Chan-Yeung M. Severe acute respiratory syndrome (SARS) and health-care workers. *Int J Occup Environ Health*. 2004;10(4):421–7.
277. Chan AO, Huak CY. Psychological impact of the 2003 severe acute respiratory syndrome outbreak on health care workers in a medium size regional general hospital in Singapore. *Occup Med*. 2004;54(3):190–6.
278. Chua SE, Cheung V, Cheung C, McAlonan GM, Wong JW, Cheung EP, et al. Psychological effects of the SARS outbreak in Hong Kong on high-risk health care workers. *Can J Psychiatry*. 2004;49(6):391–3.
279. McAlonan GM, Lee AM, Cheung V, Cheung C, Tsang KW, Sham PC, et al. Immediate and sustained psychological impact of an emerging infectious disease outbreak on health care workers. *The Canadian Journal of Psychiatry*. 2007;52(4):241–7.
280. Tam CW, Pang EP, Lam LC, Chiu HF. Severe acute respiratory syndrome (SARS) in Hong Kong in 2003: stress and psychological impact among frontline healthcare workers. *Psychol Med*. 2004;34(7):1197.
281. Wu P, Fang Y, Guan Z, Fan B, Kong J, Yao Z, et al. The psychological impact of the SARS epidemic on hospital employees in China: exposure, risk perception, and altruistic acceptance of risk. *The Canadian Journal of Psychiatry*. 2009;54(5):302–11.
282. Bai Y, Lin C-C, Lin C-Y, Chen J-Y, Chue C-M, Chou P. Survey of stress reactions among health care workers involved with the SARS outbreak. *Psychiatr Serv*. 2004;55(9):1055–7.
283. Lee AM, Wong JGWS, McAlonan GM, Cheung V, Cheung C, Sham PC, et al. Stress and psychological distress among SARS survivors 1 year after the outbreak. *Can J Psychiatry*. 2007;52(4):233–40.
284. Ananda-Rajah M, Veness B, Berkovic D, Parker C, Kelly G, Ayton D. Hearing the voices of Australian healthcare workers during the COVID-19 pandemic. *BMJ Leader*. 2021;5(1):31–5.
285. Milne SJ, Corbett GA, Hehir MP, Lindow SW, Mohan S, Reagu S, et al. Effects of isolation on mood and relationships in pregnant women during the covid-19 pandemic. *Euro J Obstet Gynecol Reprod Biol*. 2020;252:610–1.
286. Marchetti D, Fontanesi L, Mazza C, Di Giandomenico S, Roma P, Verrocchio MC. Parenting-related exhaustion during the Italian COVID-19 lockdown. *J Pediatr Psychol*. 2020;45(10):1114–23.
287. Auðardóttir AM, Rüdólfssdóttir AG. Chaos ruined the children's sleep, diet, and behavior: Gendered discourses on family life in pandemic times. *Gender Work Org*. 2020;28(5):168–82.
288. Laufer A, Shechory BM. Gender differences in the reaction to COVID-19. *Women Health*. 2021;61(8):800–10.
289. Afifi M. Gender differences in mental health. *Singapore Med J*. 2007;48(5):385–91.
290. Feng Z, Savani K. Covid-19 created a gender gap in perceived work productivity and job satisfaction: implications for dual-career parents working from home. *Gender in Management: An International Journal*. 2020.
291. Craig L, Churchill B. Dual-earner parent couples' work and care during COVID-19. *Gend Work Organ*. 2021;28(5):66–79.
292. İlkkaracan İ, Memiş E. Transformations in the gender gaps in paid and unpaid work during the COVID-19 pandemic: findings from Turkey. *Fem Econ*. 2021;27(1–2):288–309.
293. Costoya V, Echeverría L, Edo M, Rocha A, Thailinger A. Gender gaps within couples: Evidence of time re-allocations during COVID-19 in Argentina. *J Fam Econ Issues*. 2021;43:213–26.
294. Chauhan P. Gendering COVID-19: impact of the pandemic on women's burden of unpaid work in India. *Gend Issues*. 2021;38(4):395–419.
295. Czymara CS, Langenkamp A, Cano T. Cause for concerns: gender inequality in experiencing the COVID-19 lockdown in Germany. *Eur Soc*. 2021;23(sup1):S68–81.
296. Pinquart M, Sörensen S. Gender differences in self-concept and psychological well-being in old age: a meta-analysis. *J Gerontol B Psychol Sci Soc Sci*. 2001;56(4):P195–213.
297. Pagan R. Gender and age differences in loneliness: evidence for people without and with disabilities. *Int J Environ Res Public Health*. 2020;17(24):9176.
298. Ausín B, González-Sanguino C, Castellanos MÁ, Muñoz M. Gender-related differences in the psychological impact of confinement as a consequence of COVID-19 in Spain. *J Gender Stud*. 2020;30(1):29–38.
299. Bu F, Steptoe A, Fancourt D. Who is lonely in lockdown? Cross-cohort analyses of predictors of loneliness before and during the COVID-19 pandemic. *Public Health*. 2020;186:31–4.
300. Hu Y, Gutman LM. The trajectory of loneliness in UK young adults during the summer to winter months of COVID-19. *Psychiatry Res*. 2021;303:114064.
301. Savage RD, Wu W, Li J, Lawson A, Bronskill SE, Chamberlain SA, et al. Loneliness among older adults in the community during COVID-19: a cross-sectional survey in Canada. *BMJ Open*. 2021;11(4):e044517.
302. Elran-Barak R, Mozeikov M. One month into the reinforcement of social distancing due to the COVID-19 outbreak: subjective health, health behaviors, and loneliness among people with chronic medical conditions. *Int J Environ Res Public Health*. 2020;17(15):5403.
303. Enea V, Eisenbeck N, Petrescu TC, Carreno DF. Perceived impact of quarantine on loneliness, death obsession, and preoccupation with God: predictors of increased fear of COVID-19. *Front Psychol*. 2021;12:643977.
304. Rania N, Coppola I. Psychological impact of the lockdown in Italy due to the COVID-19 outbreak: are there gender differences? *Front Psychol*. 2021;12:476.
305. Magis-Weinberg L, Gys CL, Berger EL, Domoff SE, Dahl RE. Positive and negative online experiences and loneliness in Peruvian adolescents during the COVID-19 lockdown. *J Res Adolesc*. 2021;31(3):717–33.
306. Losada-Baltar A, Jiménez-Gonzalo L, Gallego-Alberto L, Pedroso-Chaparro MdS, Fernandes-Pires J, Márquez-González M. "We are staying at home": association of self-perceptions of aging, personal and family resources, and loneliness with psychological distress during the lockdown period of COVID-19. *J Gerontol: Series B*. 2020;76(2):e10–6.
307. Hansen T, Nilsen TS, Yu B, Knapstad M, Skogen JC, Vedaa Ø, et al. Locked and lonely? A longitudinal assessment of loneliness before and during the COVID-19 pandemic in Norway. *Scandinavian J Public Health*. 2021;49(7):766–73.
308. Wickens CM, McDonald AJ, Elton-Marshall T, Wells S, Nigatu YT, Jankowicz D, et al. Loneliness in the COVID-19 pandemic: associations with age, gender and their interaction. *J Psychiatr Res*. 2021;136:103–8.
309. Lo Coco G, Gentile A, Bosnar K, Milovanović I, Bianco A, Drid P, et al. A cross-country examination on the fear of COVID-19 and the sense of loneliness during the first wave of COVID-19 outbreak. *Int J Environ Res Public Health*. 2021;18(5):2586.
310. Vandervoort D. Social isolation and gender. *Curr Psychol*. 2000;19(3):229–36.
311. Victor C, Scambler S, Bond J, Bowling A. Being alone in later life: loneliness, social isolation and living alone. *Rev Clin Gerontol*. 2000;10(4):407–17.
312. Taylor HO, Taylor RJ. Social isolation, loneliness, and health among older men. *Annu Rev Gerontol Geriatr*. 2018;39(1):107–24.
313. Smith KJ, Gavey S, Riddell NE, Kontari P, Victor C. The association between loneliness, social isolation and inflammation: a systematic review and meta-analysis. *Neurosci Biobehav Rev*. 2020;112:519–41.
314. Anastasiou E, Duquenne M-N. What about the "social aspect of COVID"? Exploring the determinants of social isolation on the Greek population during the COVID-19 lockdown. *Social Sciences*. 2021;10(1):27.
315. Killgore WDS, Cloonan SA, Taylor EC, Miller MA, Dailey NS. Three months of loneliness during the COVID-19 lockdown. *Psychiatry Res*. 2020;293:113392.
316. Dagnino P, Anguita V, Escobar K, Cifuentes S. Psychological effects of social isolation due to quarantine in Chile: an exploratory study. *Front Psychiatry*. 2020;11:591142.
317. Sugaya N, Yamamoto T, Suzuki N, Uchiumi C. Social isolation and its psychosocial factors in mild lockdown for the COVID-19 pandemic: a cross-sectional survey of the Japanese population. *BMJ Open*. 2021;11(7):e048380.

318. Müller F, Röhr S, Reininghaus U, Riedel-Heller SG. Social isolation and loneliness during COVID-19 lockdown: associations with depressive symptoms in the German old-age population. *Int J Environ Res Public Health*. 2021;18(7):3615.
319. Issa H, Jaleel E. Social isolation and psychological wellbeing: lessons from Covid-19. *Management Science Letters*. 2021;11(2):609–18.
320. Maguire C. An Irish experience of the effects of social isolation and social media use during COVID-19. Dublin Business School. 2021.
321. Compton MT, Shim RS. The social determinants of mental health. *Focus*. 2015;13(4):419–25.
322. Bacigalupe A, Cabezas A, Bueno MB, Martín U. Gender as a determinant of mental health and its medicalization. *SESPAS Report 2020*. *Gac Sanit*. 2020;34(Suppl 1):61–7.
323. Cabezas-Rodríguez A, Utzet M, Bacigalupe A. Which are the intermediate determinants of gender inequalities in mental health?: A scoping review. *Int J Soc Psychiatry*. 2021;67(8):1005–25.
324. World Health Organisation. Social determinants of Mental Health. 2014.
325. Astbury J. Gender disparities in mental health. 2001.
326. Horesh D, Brown AD. Traumatic stress in the age of COVID-19: a call to close critical gaps and adapt to new realities. *Psychol Trauma Theory Res Pract Policy*. 2020;12(4):331.
327. Sokolow SH, Nova N, Pepin KM, Peel AJ, Pulliam JRC, Manlove K, et al. Ecological interventions to prevent and manage zoonotic pathogen spillover. *Philos Trans R Soc Lond B Biol Sci*. 2019;374(1782):20180342.
328. Ratschen E, Shoesmith E, Shahab L, Silva K, Kale D, Toner P, et al. Human-animal relationships and interactions during the Covid-19 lockdown phase in the UK: Investigating links with mental health and loneliness. *PLoS ONE*. 2020;15(9):e0239397.
329. Oliva JL, Johnston KL. Puppy love in the time of Corona: dog ownership protects against loneliness for those living alone during the COVID-19 lockdown. *Int J Soc Psychiatry*. 2021;67(3):232–42.
330. Kogan LR, Currin-McCulloch J, Bussolari C, Packman W, Erdman P. The psychosocial influence of companion animals on positive and negative affect during the COVID-19 pandemic. *Animals*. 2021;11(7):2084.
331. Mueller MK, Richer AM, Callina KS, Charamaraman L. Companion animal relationships and adolescent loneliness during COVID-19. *Animals*. 2021;11(3):885.
332. Bowler DE, Buyung-Ali LM, Knight TM, Pullin AS. A systematic review of evidence for the added benefits to health of exposure to natural environments. *BMC Public Health*. 2010;10(1):1–10.
333. Collado S, Staats H, Corraliza JA, Hartig T. Restorative Environments and Health. In: Fleury-Bahi G, Pol E, Navarro O, editors. *Handbook of Environmental Psychology and Quality of Life Research*. Cham: Springer International Publishing; 2017. p. 127–48.
334. Kondo MC, Jacoby SF, South EC. Does spending time outdoors reduce stress? A review of real-time stress response to outdoor environments. *Health Place*. 2018;51:136–50.
335. Stieger S, Lewetz D, Swami V. Emotional well-being under conditions of lockdown: An experience sampling study in Austria during the COVID-19 pandemic. *J Happiness Stud*. 2021;22:2703–20.
336. Heavey L, Casey G, Kelly C, Kelly D, McDarby G. No evidence of secondary transmission of COVID-19 from children attending school in Ireland, 2020. *Eurosurveillance*. 2020;25(21):2000903.
337. Viner RM, Mytton OT, Bonell C, Melendez-Torres G, Ward J, Hudson L, et al. Susceptibility to SARS-CoV-2 infection among children and adolescents compared with adults: a systematic review and meta-analysis. *JAMA Pediatr*. 2021;175(2):143–56.
338. World Health Organisation. COVID-19 - IFRC, UNICEF and WHO issue guidance to protect children and support safe school operations. Geneva: World Health Organisation; 2020.
339. Lewis SJ, Munro AP, Smith GD, Pollock AM. Closing schools is not evidence-based and harms children. *British Med J Publishing Group*. 2021;372:n521.
340. Munro AP, Faust SN. Children are not COVID-19 super spreaders: time to go back to school. *Arch Dis Child*. 2020;105(7):618–9.
341. Bargain O, Aminjonov U. Trust and compliance to public health policies in times of COVID-19. *J Public Econ*. 2020;192: 104316.
342. Miki T, Fujiwara T, Yagi J, Homma H, Mashiko H, Nagao K, et al. Impact of parenting style on clinically significant behavioral problems among children aged 4–11 years old after disaster: a follow-up study of the great East Japan earthquake. *Front Psych*. 2019;10:45.
343. Tavassolie T, Dudding S, Madigan A, Thorvardarson E, Winsler A. Differences in perceived parenting style between mothers and fathers: Implications for child outcomes and marital conflict. *J Child Fam Stud*. 2016;25(6):2055–68.
344. Bin M, Cheung P, Crisostomi E, Ferraro P, Lhachemi H, Murray-Smith R, et al. On Fast Multi-Shot COVID-19 Interventions for Post Lock-Down Mitigation. *arXiv: Physics and Society*. 2020.
345. Australian Government. Factsheet for Additional 10 MBS Mental Health Sessions during COVID-19 under the Better Access Pandemic Support Measure: Australian Government; 2022 [Available from: [http://www.mbsonline.gov.au/internet/mbsonline/publishing.nsf/Content/240DC3AF97EEAF79CA2585BC00827909/\\$File/Factsheet-additional-10-Practitioners.v4.30.06.22.pdf](http://www.mbsonline.gov.au/internet/mbsonline/publishing.nsf/Content/240DC3AF97EEAF79CA2585BC00827909/$File/Factsheet-additional-10-Practitioners.v4.30.06.22.pdf)].
346. Lahiri D, Dubey S, Ardila A. Impact of COVID-19 related lockdown on cognition and emotion: A pilot study. *medRxiv*. 2020.
347. Fiorenzato E, Zabberoni S, Costa A, Cona G. COVID-19-lockdown impact and vulnerability factors on cognitive functioning and mental health. *medRxiv*. 2020.
348. Sripa P, Hayhoe B, Garg P, Majeed A, Greenfield G. Impact of GP gate-keeping on quality of care, and health outcomes, use, and expenditure: a systematic review. *Br J Gen Pract*. 2019;69(682):e294–303.

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