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Corrections

Suicide prevention and COVID-19

AUTHOR NAMES, AFFILIATIONS AND CONTACTS

1. Professor **Gabriel Ivbijaro** MBE MBBS MA MMedSci PhD FRCGP FWACPsych IDFAPA
(author for correspondence)

Visiting Professor, NOVA University, Lisbon, Portugal; Visiting Fellow Faculty of Management, Law & Social Sciences, University of Bradford, UK; President, The World Dignity Project; Secretary General World Federation for Mental Health; Past President World Federation for Mental Health;

Postal address: The Wood Street Health Centre, 6 Linford Road, London E17 3LA, UK

E-mail: gabriel.ivbijaro@gmail.com

Telephone number: +44 020 8430 7715

2. Professor **Lucja Kolkiewicz** MBBS MRCPsych IFAPA

Visiting Professor, NOVA University, Lisbon, Portugal & Consultant Psychiatrist East London NHS Foundation Trust, London, UK

E-mail: lucja.kolkiewicz@nhs.net

3. Professor Sir **David Goldberg** KBE

Emeritus Professor Kings College, London, UK

E-mail: davidpgoldberg98@gmail.com

4. Ms **Isatou N.S. N'jie**, BA Hons DPS MCLIP MInstLM

Clinical Librarian, North East London NHS Foundation Trust, London, UK

E-mail: isatou.njie@nhs.net

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5. Professor **Todd Edwards** BA MA PhD

Professor of Marital and Family Therapy Program, University of San Diego, USA & Visiting Professor, NOVA University, Lisbon, Portugal

6. Professor **Michelle B. Riba** MD, MS

University of Michigan Department of Psychiatry, Associate Director University of Michigan Depression Center, Ann Arbor, MI, USA

E-mail: mriba@med.umich.edu

7. Professor **Igor Švab** MD PhD

University of Ljubljana, Medical Faculty, Department of Family Medicine, Slovenia

E-mail: igor.svab@mf.uni-lj.si

8. Professor **Jeffrey Geller** MD MPH

Professor of Psychiatry, University of Massachusetts Medical School

E-mail: Jeffrey.Geller@umassmed.edu

9. Mr **Yaccub Enum** BSc MSc DLSHTM

Principal Public Health Specialist, London Borough of Barking and Dagenham, UK

E-mail: yaccub@gmail.com

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ABSTRACT

The current pandemic has led to societal difficulties and threatened the fabric of our lifestyle with increased morbidity and mortality and can be tracked in a variety of ways. Modelling studies published since the COVID 19 pandemic was declared in March 2020 estimate that suicide rates will increase by anywhere between 1% to 145% globally as a result of the pandemic.

This review provides a narrative to summarise the literature that has been published in peer reviewed journals about COVID-19 and suicide during 2020 and makes the following

recommendations: 1) investing in active labour market programmes will result in a decreased suicide rate during times of high unemployment 2) People in low paid and casual jobs require specific support because they are most financially vulnerable during a pandemic related crisis 3) Women require specific support during a pandemic because of the type of employment they have and because they often carry a greater proportion of the domestic burden and are at increased risk of domestic violence during lockdown and crisis 4) Mental health and substance misuse services need to be appropriately funded and prioritised during and post pandemic, due to the associated increase in substance misuse during a pandemic causing worsening mental health and increased risk of suicide 5) National Suicide Prevention Strategies should be developed by all countries and should anticipate response to a range of disasters, including a pandemic 6) Suicide prevention is everybody's business and National Suicide Prevention Strategies should adopt a whole-systems approach including mental health services, primary care, social care, NGO's and other community stakeholders 7) Suicide is preventable 8) It is essential to prioritise suicide prevention strategies in the COVID and post-COVID period to ensure that lives are saved

KEYWORDS

COVID 19; suicide prevention; aetiology; interventions; policy

INTRODUCTION

Preventing suicide is a major challenge. 800,000 people die by suicide annually in high, medium, and low-income countries and this number has remained static for many years, despite efforts to decrease the rate of suicide (WHO 2014; Ivbijaro et al 2019). It is estimated that 79% of all suicides take place in low and middle-income countries (WHO 2014). With all the social interventions and economic difficulties associated with the COVID 19 pandemic will this remain the case? There has been a great deal of research on how suicide can be prevented and many initiatives, however the rate and speed of the current COVID 19 pandemic is likely to threaten any progress made and we therefore need to review new evidence arising from the COVID 19 pandemic and add this to our existing knowledge base.

The current pandemic has led to societal difficulties and threatened the fabric of our lifestyle with increased morbidity and mortality and can be tracked in a variety of ways including the Worldometer (<https://www.worldometers.info/about/>). Modelling studies that published

since the COVID 19 pandemic was declared in March 2020 estimate that suicide rates will increase by anywhere between 1% to 145% globally as a result of the pandemic (Kawohl & Nordt 2020; John et al 2020). Other reviews have suggested that there will be no increase in suicide rates (Leske 2020). There may also be a time lag in reporting suicides associated with coronavirus because of delayed inquests due to government social distancing measures (Office of National Statistics England 2020). A recent review focussed on a high-income country postulated that the psychological consequences of policies to manage the spread of COVID-19 will lead to an increase in psychosocial risk resulting in increased suicidality that may persist beyond the current pandemic (Moser et al 2020).

This review provides a narrative to summarise the literature that has been published in peer reviewed journals about COVID-19 and suicide during 2020 and makes recommendations for the future.

METHODOLOGY

A thorough literature search was conducted on high quality evidence sources including Medline, Embase, PsycInfo, PubMed, Cochrane Library and NICE guidelines using several keywords and combining them using the relevant search operators: Boolean logic, truncation, parenthesis and proximity features. The search was limited to human studies and publications written in English language only. No date limit was applied as the topic is current and all publications were considered relevant. Three different age group categories were identified for inclusion namely: children and adolescents; working age adults; older adults. Animal studies were excluded from the search.

We examined the relationships to existing mental illness or history of mental illness, prevention strategies and changes in overall suicide rates. The combined search results from the five databases and guidelines totalled 628 publications from 2011 -2021. 270 titles were found to be duplicates and were removed from the results giving a total of 358 unique titles.

The 358 titles were independently screened and reviewed by the authors to determine eligibility and summarize the findings. The literature was interrogated by two of the authors to select the papers relevant to this narrative review including those related to previous SARS's outbreaks. This was then shared with the other authors for additional comments and feedback.

A total of 39 papers are summarised in this review and grouped using the headings aetiological factors, proposed interventions to increase access and national policies in order to provide a framework for suicide prevention during pandemics such as COVID 19.

FINDINGS

This is a narrative review that includes published systematic reviews, longitudinal analyses and other types of reviews and provides a lens that brings many ideas together from which a series of inferences can be made when considering suicide prevention and COVID-19.

The articles that we have highlighted have been grouped into A. those that address aetiological factors B. those which propose interventions to increase care in an attempt to decrease the rate of suicide and C. those addressing national policy and suicide prevention.

For each paper we have chosen to highlight we have provided the reference, provided a brief summary of the reviewed article highlighting the key findings and have summarised the key learning points for each paper listed below.

A. AETIOLOGICAL FACTORS

REFERENCE	SUMMARY	KEY LEARNING POINTS
1. Banerjee <i>et al.</i> (2020) 'The dual pandemic' of suicide and COVID-19: a biopsychosocial narrative of risks and preventions <i>Narrative review</i>	With increased social isolation, fear, stigma, abuse and economic fallout associated with COVID 19 pandemic there has been an increased risk of psychiatric disorders, chronic trauma with an eventual risk of increased suicidality and suicidal behaviour linking this to immune mediated mechanisms of stress.	<ul style="list-style-type: none"> Propose a biopsychosocial model linking immune response social isolation, fear, stigma, abuse and economic fallout to increase risk of suicide to guide future interventions
2. Blum <i>et al.</i> (2020) Putative COVID-19 induction of reward deficiency syndrome (RDS) and associated behavioural addictions with potential concomitant dopamine depletion: is COVID-19 social distancing a double edged sword? <i>Review</i>	Possible downregulation of ACE2 may result in decreased serotonin and dopamine production and associated to addictive behaviour and suggest mitigating to support dopaminergic homeostasis	<ul style="list-style-type: none"> Need to consider biological consequences of social distancing in suicide prevention
3. O'Connor <i>et al.</i> (2020) Mental health and well-being during the COVID-19 pandemic: longitudinal analysis of	Increased incidence of suicidal thoughts between March to May 2020; vulnerable populations had worse mental health	<ul style="list-style-type: none"> Vulnerable populations need to be targeted as part of a suicide prevention strategy

adults in the UK COVID-19 mental health & well-being study.

Survey

4. Zalsman *et al.* (2020) Suicide in the time of COVID-19: review and recommendations.

Position paper

outcomes; no significant change in loneliness

International Academy of Suicide Research (IASR). Economic effects of COVID 19 likely to result in increased suicide rates and elderly an 'at risk' group because of social isolation & physical health co-morbidity. Young children & health professionals may also be at increased risk.

- Addressing the economic consequences of COVID will reduce risk of suicide

5. Ren *et al.* (2020) Public mental health under the long-term influence of COVID-19 in China: geographical and temporal distribution.

Online survey

n= 1172; 30.1% smokers increased smoking; 11.3% drinkers increased alcohol; prevalence of depression 18.8%, anxiety 13.3%, MH problems 7.6%, high risk of suicidal behaviour 2.8%, clinical insomnia 7.2%, PTSD 7.0% & mod/high perceived stress 67.9%.

- COVID 19 increases risk of suicide including through biological risk factors such as insomnia

6. Bryan *et al.* (2020) Associations among state level physical distancing measures and suicidal thoughts and behaviours among U.S. adults during the early COVID-19 pandemic.

Cross sectional general population survey

Life stressors, probably depression, past-month suicide ideation, past month suicide attempts not elevated.

Arguments with partner, serious legal problems & concerns about life threatening illness associated with increased past month suicide attempts. Suicide attempts significantly lower associated with unexpected bill or expense.

- Does not support that physical distancing correlates to worse health outcomes.
- Suggest concerns about life threatening illness uniquely associated with increased risk of suicide attempt

7. Devitt (2020) Can we expect an increased suicide rate due to COVID-19?

Economic recession appears toxic. Mitigating economic effects appears protective

- An individual’s economic situation should be considered as part of assessment

Comparative review with previous disasters

B. PROPOSED INTERVENTIONS TO INCREASE ACCESS

REFERENCE	SUMMARY	KEY LEARNING POINTS
<p>8. Edwards <i>et al.</i> (2020) Preparing for the behavioural health impact of COVID-19 in Michigan</p> <p><i>Review</i></p>	<p>Anticipate increase in suicide rates in Michigan due to economic downturn, isolation, quarantine, increased substance misuse and decreased primary care (49%) and behavioural health (30%) access.</p>	<ul style="list-style-type: none"> • Identify a need to promote access to mental health support including raising awareness, affordability and technology • Workforce investment including primary care • Lockdowns can result in increased substance misuse disorder
<p>9. Hamm <i>et al.</i> (2020) Experiences of American older adults with pre-existing depression during the beginnings of the COVID-19 pandemic: a multicity, mixed-methods study</p> <p><i>Descriptive study</i></p>	<p>Older adults in USA with pre-existing depression were concerned about legal restrictions and the consequences of the pandemic & outraged about inadequate government response</p>	<ul style="list-style-type: none"> • Pandemic policies need to support continued access to routine medical services

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| <p>10. Every-Palmer <i>et al.</i> (2020) Psychological distress, anxiety, family violence, suicidality, and wellbeing in New Zealand during the COVID-19 lockdown: a cross-sectional study.</p> | <p>30% moderate to severe distress. 6% suicidal ideation; 2% made attempts; 2% made plans.</p> <p>Suicidality highest in 18–34-year-olds</p> | <ul style="list-style-type: none"> • Policies to decrease mortality associated with COVID have the potential to increase suicidal thoughts and behaviour |
| <p><i>Cross-sectional study</i></p> | | |
| <p>11. D'Souza <i>et al.</i> (2020) Aggregated COVID-19 suicide incidences in India: fear of COVID-19 infection is the prominent causative factor.</p> | <p>69 cases/63 male. Fear of infection, work related stress, financial situation, inability to return home were driving forces in suicidality.</p> | <ul style="list-style-type: none"> • Suggest a coherent collaborative approach to improve access to health during COVID including nationwide tele-medicine |
| <p><i>Study</i></p> | | |
| <p>12. Merlin <i>et al.</i> (2020) Quarantine has its impact on people worldwide. A review.</p> | <p>Policies to prevent spread have negative psychosocial consequences which last beyond the epidemic</p> | <ul style="list-style-type: none"> • Monitoring for suicidality needs to continue beyond the active phase of a pandemic |
| <p><i>Review</i></p> | | |
| <p>13. Talevi <i>et al.</i> (2020) The COVID-19 outbreak: impact on mental health and intervention strategies.</p> | <p>Postulate an increase in suicide rates and violence.</p> | <ul style="list-style-type: none"> • Recommend screening for mental health disorder in people affected by COVID-19 and develop care packages to support |
| <p><i>Review</i></p> | | |
| <p>14. Wasserman <i>et al.</i> (2020) Adaptation of evidence-based suicide prevention strategies during and after the COVID-19 pandemic.</p> | <p>A pandemic is an increased psychosocial stressor for individuals & society, and this can lead to increased suicide</p> | <ul style="list-style-type: none"> • Need to develop appropriate chains of care to support people including primary care, hospitals and community services • Families should be included in all care management |
| <p><i>Review</i></p> | | |

<p>15. Cuellar <i>et al.</i> (2020) How to mitigate the mental health care consequences of the COVID-19 financial crisis.</p> <p><i>Review</i></p>	<p>Postulate that risk of mental ill health & suicide will increase and help seeking decrease especially in USA without Universal Health Coverage.</p> <p>Conclude that people who lose insurance coverage because of job losses require protection through insurance marketplaces.</p>	<ul style="list-style-type: none"> • Employees working in social services should be trained in suicide prevention to enable the right help and support.
<p>16. Fisher <i>et al.</i> (2020) Mental health of people in Australia in the first month of COVID-19 restrictions: a national survey.</p> <p><i>Survey</i></p>	<p>03/04/2020- 02/05/2020 online survey. PHQ-9; GAD-7, 10-point optimism visual analogue scale. N= 13,829. PHQ-9 depression 27.6%; GAD 21%; 14.6% better off dead; 59.2% more irritable; 28.3% > optimism. Positive correlation between ill health & job loss, COVID 19 worry, high level restrictions. Mental health problems widespread in first month of stage two COVID restrictions. 25% mild/moderate depressive symptoms or anxiety.</p>	<ul style="list-style-type: none"> • Public health response that includes universal, selective and indicated clinical interventions needed.
<p>17. Iob <i>et al.</i> (2020) Abuse, self-harm and suicidal ideation in the UK during the COVID -19 pandemic.</p> <p><i>Survey</i></p>	<p>Frequency of abuse, self-harm and thoughts of suicide/self-harm higher in women, BAME, people experiencing socioeconomic disadvantage, unemployment, disability, chronic physical illness, mental disorder and diagnosis COVID-19. Medications most common intervention during pandemic < 50% accessing formal/informal support</p>	<ul style="list-style-type: none"> • Non medication interventions need to be made more accessible during a pandemic

18. Xin *et al.* (2020) Negative cognitive and psychological correlates of mandatory quarantine during the initial COVID-19 outbreak in China.
Study
- N= 24,378 students in 26 universities in 16 cities (01-10 Feb 2020). a) Mandatory quarantine significantly associated with perceived discrimination, perceived high risk of infection, emotional distress, probable depression and suicidal ideation; Perceived discrimination associated with emotional distress; indirect paths via COVID-19 related negative cognitions accounted for 12-15% of total effect.
- Recommend integrating mental health care into planning and implementation of quarantine measures.
 - Longitudinal studies to explore mechanisms of quarantine related distress
19. Jurblum *et al.* (2020) Psychological consequences of social isolation and quarantine: issues related to COVID-19 restrictions.
Review
- Quarantine increases risk of suicide and causes anger and acute distress especially people of lower socioeconomic status
- The General Practitioner has a role in managing this population to improve access to health and provide psychoeducation to reduce stressors
20. Nelson *et al.* (2020) Role of primary care in suicide prevention during the COVID-19 pandemic.
Review
- Pre-COVID over 80% of people who commit suicide have seen their primary care physician in the previous year and 50% in the previous month (Nelson et al 2020). During COVID access to primary care physicians has been reduced and these figures may change
- Primary care access needs to be strengthened during pandemic to improve health seeking behaviour
21. Czeisler *et al.* (2020) Mental health, substance use, and suicidal ideation during the COVID-19 pandemic- United States, June 24-30,2020
- Suicidal thoughts in last 30 days: 10.7%; significantly higher in 18-24 years (25.5%); minority groups (Hispanics (18.6%), non-Hispanic Black (15.1%); self-reported unpaid caregivers
- Community level prevention & intervention including health education required

Representative panel survey

for adults (30.7%); essential workers (21.7%).

22. Brown *et al.* (2020)
Embedding an evidence-based model for suicide prevention in the national health service: a service improvement initiative.

Remodelling of a mental health crisis service utilising Collaborative Assessment and Management of Suicidality (CAMS)

- 24/7 face to face, telephone or digital access to health during pandemic should be available and supported by an integrated care approach

23. Fitzpatrick *et al.* (2020)
How bad is it? Suicidality in the middle of the COVID-19 pandemic.

National online survey

n=10,368. 15% of sample high risk (+7 on SBQ-R), p<.0000 - Blacks, Native Americans, Hispanics, families with children, unmarried and younger respondents compared with the rest.

- Practitioners should prepare for significant mental health fall-out in months ahead

C. NATIONAL POLICIES

REFERENCE

24. Que *et al.* (2020) Raising awareness of suicide prevention during the COVID-19 pandemic.

Micro-review

25. Pathare *et al.* (2020)
Analysis of news media reports of suicides and attempted suicides during the COVID-19 lockdown in India.

Systematic search of online news media reports

SUMMARY

Suggest interventions for suicide prevention during COVID-19 including need to stay connected

Online review of news publications suggesting an increase in suicide since lockdown in 2020 when compared to 2019 with a change in method used: Hangings (42% vs 22%); poison (8.5% vs 21.5%); train (2% vs 9.4%) and were more likely to be male

KEY LEARNING POINTS

- Biopsychosocial disasters including coronavirus cause societal trauma and should be anticipated by policy makers
- Suggest strengthening national suicide prevention strategy which should be comprehensive and include response to pandemics such as COVID during which method of suicide may change

26. Sher, L. (2020) The impact of COVID-19 pandemic on suicide rates.
Review
- Summarised a variety of psychosocial factors including stigma that contribute to distress and may increase suicidal thoughts.
- All COVID-19 survivors, especially those with pre-existing mental health difficulties should be actively monitored for long COVID and suicidal thoughts
27. Leaune *et al.* (2020) Suicidal behaviours and ideation during emerging viral disease outbreaks before the COVID-19 pandemic: a systematic rapid review.
Systematic rapid review
- Slight significant increase in four studies; associated with epidemic peak and in older adults. Associated with fear of being infected and social isolation.
- Suggest strengthening national suicide prevention strategy targeting psychosocial effects of emerging viral disease outbreaks (EVDO's)
28. Chou *et al.* (2020) Suicide and the elderly during the COVID-19 pandemic: an overview of different suicide theories.
Narrative review
- Adopted three theoretical approaches to interview using 1) Interpersonal theory of suicide 2) 3 step theory 3) hopelessness theory
- Suggest strengthening national suicide prevention strategy to include staff training in suicide screening
29. Zortea *et al.* (2020) The impact of infectious disease-related public health emergencies on suicide, suicidal behaviour, and suicidal thoughts.
Systematic Review
- Previous evidence from SARS and Ebola suggests an increased suicide rate associated with viral outbreaks
- Evidence suggests the need to improve quality of data collection as part of the national strategy
30. Sheffler *et al.* (2020) The interpersonal and psychological impacts of COVID-19 on risk for late-life suicide.
Mixed method study
- Older adults were more concerned about catching COVID and some felt more anxious and depressed. Use interpersonal theory of suicide to hypothesise that there will be a disproportionate impact on older adults
- Suggest strengthening national suicide prevention strategy to improve pandemic preparedness

31. Flett *et al.* (2020) Ageing and feeling valued versus expendable during the COVID-19 pandemic and beyond: a review and commentary of why mattering is fundamental to the health and well-being of older adults.
- Commentary and review*
- Review the concept of mattering in old age as a protection and consider economically informed messages that may be associated with not mattering during a pandemic and how this may affect older adults.
- Recommend that sense of mattering in the elderly needs further research
 - Suggest pandemic related messages should take account of and instil a sense of mattering in the elderly to protect against poor mental health
32. Zhou *et al.* (2020) The prevalence and risk factors of psychological disturbance of frontline medical staff in China under the COVID-19 epidemic: workload should be concerned.
- Study*
- Staff had increased levels of mental ill health compared with general public, except suicide.
- Family income and years working negatively associated with suicide risk.
- Policies need to be developed to support wellbeing of frontline staff
33. Leske *et al.* (2020) Real-time suicide mortality data from police reports in Queensland, Australia, during the COVID-19 pandemic: an interrupted time-series analysis.
- Series review suicide*
- No clear evidence of impact on suicide but suggestion COVID contributed to some suicides in Queensland
- Need for government to maintain monitoring and reporting of suicide mortality in real-time during a pandemic
34. Han *et al.* (2020) Planning for mental health needs during COVID-19.
- Review*
- Most prominent complaints anxiety, distress often attributed to isolation. PTSD quite common & possibly more enduring than depression, insomnia & alcohol misuse. Predicted post COVID 19 economic impact suggest depression & suicide rates may increase over time. Mental health sequelae will mirror previous pandemics.
- Clinicians and mental health leaders should focus planning efforts on negative effects of isolation particularly anxiety, distress & PTSD
 - Need to focus on delivering online evidence-based treatments

35. Nomura *et al.* (2020) Trends in suicide in Japan by gender during the COVID-19 pandemic, up to September 2020.
Study
- Excess female suicides noted July-Sept 2020. Suggest timely access to mental health care and financial social support and optimal treatment of mental illness
- National suicide prevention policies must include social and financial support to reduce suicidality during a pandemic
36. Moutier (2020) Suicide prevention in the COVID-19 era: transforming threat into opportunity.
Review
- Suicide prevention strategy will need to address pre-pandemic risk factors as well as pandemic related risk factors.
- Policy makers and healthcare providers should find ways to improve access to evidence- based strategies in pandemics
37. McIntyre *et al.* (2020) Projected increases in suicide in Canada as a consequence of COVID-19.
- % point increase in employment associated with 1% suicide increase between 2000 to 2018. Time trend regression models used to evaluate and predict excess suicides in 2020-2021 with 1.6% employment in 2020; 1.2% in 2021 & increase of 10.7% in 2020 & 8.9% in 2021.
- Suicide prevention in the context of rising unemployment important to target in national policies
38. Kelman (2020) COVID-19: what is the disaster?
Anthropology review
- Disaster occurs at multiple levels simultaneously. Expectations of further disaster layers incorporate more mental health issues and self-harm. Lockdown, although lifesaving results in disaster
- Suicide plans should better incorporate what is known from disaster planning

DISCUSSION

In this narrative review we have put together a range of key published literature to provide a lens to further our understanding about suicide prevention and COVID-19, provided a summary of the reviewed article, highlighted the key findings, summarised the key learning points and highlight some of the emerging key themes in the discussion below.

A. Aetiological factors

The emerging evidence is that there has been an increase in the incidence of suicidal thoughts and completed suicide in the population since the pandemic was declared. This is associated with vulnerable populations (O'Connor 2020; Bryan 2020). It is postulated that the policies developed to reduce spread of COVID by physical contact have resulted in increased psychosocial stressors and increased levels of mental disorder (Banerjee 2020; Ren 2020).

A consequence of the COVID-19 pandemic is rising levels of unemployment and weakness in the financial markets. Previous research demonstrates an association between rising unemployment, financial recession and rising rates of suicide (Cuellar et al 2020). It is striking that, as unemployment rises, there is a decrease in road traffic accidents because people are not going out as much and during COVID-19 there has been an increase in physical activity resulting in improved physical health outcomes with an expected improvement in mental

health. However in contrast the rate of suicide during recession increases (Cuellar et al 2020) so this needs to be monitored in the aftermath of the COVID-19 pandemic

Multivariate regression analysis examining associations between changes in employment and mortality for 26 EU countries between 1970 and 2007 showed that for every 1% increase in unemployment there was a 0.79% rise in suicides in people under the age of 65 (Stuckler et al 2009). With the rising unemployment rates associated with the COVID-19 pandemic it is important to monitor rates over time because intervention to decrease suicide rates is possible because for every US\$10 per person increased investment in labour market programmes was associated with a 0.38% decrease in suicide rates (95% CI – 0.004 to -0.071).

The COVID pandemic has caused economic hardship and financial difficulties for many people leading to an increased risk of suicide (Devitt 2020; Zalsman et al 2020). A Canadian study also showed that COVID-19 is associated with increased levels of unemployment which feeds into excess deaths by suicide and predicted that the COVID-19 pandemic is likely to increase the suicide rate by between 3.3% to 8.45% during 2020 and 2021 compared with 2018 rates (McIntyre et al 2020).

The national policies implemented to decrease the spread of COVID 19 by reducing physical contact have led to increased social isolation, fear and stigma which is associated with increased suicidality (Banerjee et al 2020; Bryan et al 2020; Zalsman et al 2020). It is also postulated that there is associated biological mediation due to downregulation of ACE 2 receptors (Blum et al 2020). There is also an increase in smoking and alcohol use.

The increased rate of mental illness, alcohol use and smoking associated with the COVID 19 pandemic will lead to increased rates of suicide, and this is worse in vulnerable populations (O'Connor et al 2020; Bryan et al 2020, Ren et al 2020).

B. Interventions to Increase Access

The current COVID 19 pandemic has placed people under increased stress resulting in increased incidence of mental illness which increases the risk of suicide.

An Australian national survey of mental health completed during the first month of COVID-19 restrictions showed that 27.6% of respondents reported mild to moderate symptoms of depression and 21% reported clinically significant symptoms of anxiety. 14.6% of respondents reported “thoughts of self-harm or being better off dead” (Fisher et al 2020).

A UK survey that explored patterns of self-harm and thoughts of suicide during the first month of COVID-19 restrictions showed that 9% of respondents reported physical or psychological abuse with 18% of participants expressing thoughts of suicide or self-harm and 5% of participants reporting that they had harmed themselves. 60% of people who reported self-harm had been able to access at least one type of structured intervention during this period and 40% of those with thoughts of suicide and self-harm. 50% of respondents from both these groups reported receiving some kind of informal support from friends and family during this period (Iob et al 2020).

A qualitative global survey of people with mental health problems and those working in mental health during the first months of the pandemic found that many participants complained of loneliness, feelings of anxiety and depression and were unable to access mental health and mental health wellbeing services. The most popular coping strategies used by participants were speaking to family and friends, exercise and meditation (Ivbijaro et al 2020).

Reduction in suicide during the COVID-19 pandemic requires that loneliness and the fear of loneliness are addressed, and this requires a response that is beyond health and social care services. Paradoxically, people already living alone are at increased risk of feelings of loneliness during the social restrictions imposed to manage the pandemic spread (Sher 2020).

People who pay for and provide services should identify people at risk of loneliness in their population including people with pre-existing psychiatric disorders, people with a learning disability, people with low income and individuals and groups of people that were wary of health interventions before the pandemic. This will require the deployment of community health and social capital.

Government interventions aimed at physical containment to limit the pandemic spread have resulted in an increase in symptoms of mental distress, mental illness, increased rates of unemployment, increased thoughts of suicide with the onset of uncertainty, fear and despair (Wang et al 2020).

A study from Japan starts to provide a more longitudinal approach to suicide and COVID-19 as it examines trends in suicide from December 2010 to September 2020. This study showed that by September 2020 towards the end of the first wave of the global pandemic women were experiencing a greater suicide burden from COVID-19 than men with an excess of 20%-30% of suicide when compared to the previous year. This finding was consistent with a UN warning that women were considered at greater risk of psychosocial distress that can lead to suicide because they are more likely to lose their job because they are often employed in low paid work and in casual jobs (Nomura et al 2020).

Jurblum et al (2020) have used the biopsychosocial model of health to conceptualise the factors that interact to maintain psychological wellbeing in the lockdown and quarantine environment and emphasise maintaining biological, psychological and social equilibrium. They suggest that people in such conditions need to consider interventions that improve sleep hygiene and enable exercise, self-care and increased self-awareness together with a need to maintain social connectedness either physically or virtually. Many people report difficulties with maintaining a balance during periods of lockdown because the home environment has changed to become a workplace for adults, a learning environment for children and a place in which you exercise.

Results a survey in China report that during periods of government lockdown there has been an 11% increase in alcohol consumption and 30% increase in tobacco smoking, and 2.8% of respondents were considered at high risk of suicidal behaviour as assessed by the MINI suicidality module (Ren et al 2020).

A report from the USA also reported an increase in suicidal thoughts and substance misuse. 10.7% of people reported experiencing suicidal thoughts in the previous 30 days compared with 4.3% at the same time in 2018. In addition, anxiety levels were increased to 25.5% in 2020 compared with 8.1% at the same time in 2019 and prevalence of depression increased to 24.3% in 2020 compared with 6.5% at the same time in 2019. (Czeisler et al 2020; SAMSA 2018).

A systematic review of infectious diseases and the association with suicidal thoughts, behaviour and suicide noted that there is a gap in the evidence and highlighted the need to monitor outcomes beyond the pandemic to strengthen our knowledge base (Zortea et al 2020).

Suicide is preventable and, during a pandemic, efforts should be made to find novel ways to maintain access to health services so that evidence based mental health interventions can continue to be provided through primary, secondary and social care with 24-hour access to care (Brown 2020) which is often unavailable.

The delivery of employment support should be considered part of the care package provided to decrease the risk of suicide. Biological factors such as insomnia should be routinely screened for during assessment whether face to face or online (Ren 2020; Blum 2020; Banerjee).

The consequences of COVID 19 will persist for many years after the pandemic has been brought under control therefore existing national and local suicide prevention strategies should take this into account. We propose that training in psychological first aid at a population level irrespective of country income would enable the population to better recognise mental health difficulties in others and to act appropriately to access the right help.

C. National Policy

It is essential for health systems to plan for emergencies, such as a pandemic, to mitigate the health consequences of disaster, including suicide prevention (Han et al 2020). Epidemics and pandemics spread, and lessons should be learnt from every episode.

The evidence from this literature review is that strengthening of policies including the development of a comprehensive national suicide prevention strategy that takes into account the consequences of COVID 19 and other pandemics is likely to lead to a reduction in suicide rate (Que 2020; Pathare 2020; Leaine 2020; Chou 2020). There should be policies to tackle mental health stigma, and stigma associated with suicide to enable people to seek help early without the fear of criminalisation (Sher 2020).

The 2003 SARS coronavirus epidemic spread through 26 countries with more than 8000 cases, and it was noted that quarantine measures were a significant cause of psychological distress. There was a 31% increase in completed suicide in Hong Kong, particularly in the elderly. Factors that were associated with increased rates of suicide included isolation, fear of

contracting the virus, disruption of social life and the increased burden associated with long term conditions (Yip et al 2010).

A review of mental health problems associated with the 2003 SARS epidemic in Taiwan showed similar findings and made strong recommendations for collaboration across systems. Despite predicting an increase in suicide at the outset of the SARS pandemic some countries that were affected stopped monitoring for the increased rates in suicide predicted as soon as the acute phase of the crisis was over, and a recommendation made that suicide rates should be monitored carefully long-term post COVID (Tzeng et al 2020; Chan et al 2006).

Many of the issues raised during the 2003 SARS epidemic are relevant today and will remain relevant in the event of a new pandemic, especially as the Spanish flu pandemic in 1918 had very similar effects (Wasserman 1992).

Citizens, healthcare systems and governments need to anticipate an increase in psychological distress during epidemics and pandemics and ensure that mental health services continue to be supported (Han et al 2020). Nations with universal health coverage, whether insurance based or otherwise, are considered to have an added advantage during a pandemic because they can provide a more comprehensive response with improved access to care (Tzeng et al 2020; Ho Chan 2010).

One of the main challenges is a lack of data. Many high-income countries routinely collect national suicide data. This is not the case in many medium and low-income countries. Real-time data is often lacking and should be a priority in informing real time responses (Leske 2020) and may account for earlier reports that pandemics are not associated with increased rates of suicide.

There is already evidence that adopting a national suicide prevention strategy results in driving suicide rates down (Lewitzka et al 2019; Moutier 2020). National Suicide Prevention Programmes (NSPP) were introduced in the 1990's with the aim of bringing together stakeholders to develop a plan that would identify vulnerable people and provide appropriate care and interventions.

Pre-COVID about 28 countries had adopted a national Suicide Prevention Strategy. These countries should review their existing strategy taking into account the emerging literature about COVID-19 and suicide. Countries without National Suicide Prevention Programmes should urgently prioritise developing such programmes because this will mitigate against the rising risk of suicide caused by the consequences of COVID-19. Countries without a National Suicide Prevention Strategy should be encouraged to develop regional strategies and share best practice. Academic institutions, colleges and NGOs should engage with families bereaved as a result of suicide to urgently engage with governments so that their voices can be heard.

Those countries that currently consider suicide a crime should consider de-criminalisation to enable them to have more accurate data and deliver meaningful suicide prevention interventions.

The role of primary care needs to be strengthened as part of the strategy for suicide prevention and particularly so post COVID-19. Pre-COVID over 80% of people who commit

suicide have seen their primary care physician in the previous year and 50% in the previous month (Nelson et al 2020). During COVID access to primary care physicians has been reduced and these figures may change. The primary care team is evolving and may include lay workers, peer support workers and social prescribers who all require training in recognising suicide and the management of the suicidal patient. All front-line staff should be trained and accredited in suicide assessment and prevention using practice guidelines such as those produced by the APA (APA 2020). There is also a need to invest in the well-being of the health and social care workforce as they are in the front line and are more likely to develop mental ill health with an associated increased risk of suicide (Zhou 2020).

CONCLUSIONS AND RECOMMENDATIONS

The COVID-19 pandemic has been a global tragedy that has affected individuals and economies. The effect on mental health and suicide has been significant and lessons have to be learned from the comparisons made with pre-covid and early-covid time frames.

We have learned much, and hopefully this will inform public and private policies and changes, and that will impact on suicide prevention. For example, we better understand that even in the later phase of the COVID-19 pandemic in the United States, there remained an elevated prevalence of adverse mental health symptoms compared with pre-pandemic estimates, which is important because many thought that such symptoms were transient, and would erode as the pandemic waned (Czeisler ME, Lane RI, et al Feb 2021 Of note, younger adults compared to older adults(older than 65 years) showed higher prevalence of mental or behavioural health symptoms.

Creative ways to address symptoms of isolation have been studied and may be able to be extended and fostered post-COVID. For example, a layperson-delivered empathy-oriented telephone call program was able to show reduced loneliness, depressed, and anxiety compared to the control group and improved the general mental health of participants within 4 weeks (Kahlon MK, Aksan N, et al Feb 23, 2021). Thoughts for the future include whether such innovative programs can play a protective role for those at risk of clinical anxiety or depression.

Collaborating with primary care in efforts for suicide prevention continues to be important. Mann et al (AJP in Advance) reviewed 97 clinical trials and 30 population-level studies published between 2005-2019 that explored interventions to reduce suicides or suicidal behaviour and found that educating youth about suicidal behaviours, firearm restrictions, General Practitioner education and outreach to recently discharged patients all have strong effect.

Key recommendations

Lessons need to be learnt from this pandemic so that governments, policy makers and services can be prepared. These lessons will also be useful for other types of crises.

1. It is essential to have strategic systematic suicide prevention planning for future pandemics as part of disaster response plans taking a universal holistic approach to care.
2. Investing in active labour market programmes will result in a decreased suicide rate during times of high unemployment.
3. People in low paid and casual jobs require specific support because they are most financially vulnerable during a pandemic related crisis.
4. Women require specific support during a pandemic because of the type of employment they have and because they often carry a greater proportion of the domestic burden and are at increased risk of domestic violence during lockdown and crisis.
5. Mental health and substance misuse services need to be appropriately funded and prioritised during and post pandemic, due to the associated increase in substance misuse during a pandemic causing worsening mental health and increased risk of suicide.
6. National Suicide Prevention Strategies should be developed by all countries and should anticipate response to a range of disasters, including a pandemic.
7. Suicide prevention is everybody's business and National Suicide Prevention Strategies should adopt a whole-systems approach including mental health services, primary care, social care, NGO's and other community stakeholders.
8. Suicide is preventable. It is essential to prioritise suicide prevention strategies in the COVID and post-COVID period to ensure that lives are saved.

LIMITATIONS

This narrative review has only taken into account English language publications in peer reviewed journals.

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TITLE: SUICIDE PREVENTION AND COVID-19

AUTHOR NAMES, AFFILIATIONS AND CONTACTS

1. Professor **Gabriel Ivbijaro** MBE MBBS MA MMedSci PhD FRCGP FWACPsych IDFAPA

(author for correspondence)

Visiting Professor, NOVA University, Lisbon, Portugal; Visiting Fellow Faculty of Management, Law & Social Sciences, University of Bradford, UK; President, The World Dignity Project; Secretary General World Federation for Mental Health; Past President World Federation for Mental Health;

Postal address: The Wood Street Health Centre, 6 Linford Road, London E17 3LA, UK

E-mail: gabriel.ivbijaro@gmail.com

Telephone number: +44 020 8430 7715

2. Professor **Lucja Kolkiewicz** MBBS MRCPsych IFAPA

Visiting Professor, NOVA University, Lisbon, Portugal & Consultant Psychiatrist East London NHS Foundation Trust, London, UK

E-mail: lucja.kolkiewicz@nhs.net

3. Professor Sir **David Goldberg** KBE

Emeritus Professor Kings College, London, UK

E-mail: davidpgoldberg98@gmail.com

4. Ms **Isatou N.S. N'jie**, BA Hons DPS MCLIP MInstLM

Clinical Librarian, North East London NHS Foundation Trust, London, UK

E-mail: isatou.njie@nhs.net

5. Professor **Todd Edwards** BA MA PhD

Professor of Marital and Family Therapy Program, University of San Diego, USA & Visiting Professor, NOVA University, Lisbon, Portugal

6. Professor **Michelle B. Riba** MD, MS

University of Michigan Department of Psychiatry, Associate Director University of Michigan Depression Center, Ann Arbor, MI, USA

E-mail: mriba@med.umich.edu

7. Professor **Igor Švab** MD PhD

University of Ljubljana, Medical Faculty, Department of Family Medicine, Slovenia

E-mail: igor.svab@mf.uni-lj.si

8. Professor **Jeffrey Geller** MD MPH

Professor of Psychiatry, University of Massachusetts Medical School

E-mail: Jeffrey.Geller@umassmed.edu

9. Mr **Yaccub Enum** BSc MSc DLSHTM

Principal Public Health Specialist, London Borough of Barking and Dagenham, UK

E-mail: yaccub@gmail.com

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ABSTRACT

The current pandemic has led to societal difficulties and threatened the fabric of our lifestyle with increased morbidity and mortality and can be tracked in a variety of ways. Modelling studies published since the COVID 19 pandemic was declared in March 2020 estimate that suicide rates will increase by anywhere between 1% to 145% globally as a result of the pandemic.

This review provides a narrative to summarise the literature that has been published in peer reviewed journals about COVID-19 and suicide during 2020 and makes the following recommendations: 1.It is essential to have strategic systematic planning for future pandemics as part of disaster response plans taking a universal holistic approach to care 2.Investing in active labour market programmes will result in a decreased suicide rate during times of high unemployment 3.People in low paid and casual jobs require specific support 4. Women require specific support 5. Mental health and substance misuse services need to be appropriately funded and prioritised during and post pandemics 6. National Suicide Prevention Strategies should be encouraged and anticipate response to disasters such as the current pandemic 7. These strategies should not be limited only to mental health services and should include primary care 8. It is essential to prioritise suicide prevention strategies in the COVID and post-COVID period because suicide is not inevitable and is preventable.

KEYWORDS

COVID 19; suicide prevention; aetiology; interventions; policy

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