JOURNAL OF INSURANCE MEDICINE

J Insur Med 2021;49:1–8

COVID-19 – MEDICAL DIRECTOR CHALLENGES

COVID-19 and Mental Health: Should We Expect an Increase in Disability?

Timothy Meagher, MB, FRCP(C)

Disability due to mental health disorders has been increasing in many countries over the past years. The COVID-19 pandemic may worsen this trend because of 3 different, and at times overlapping, pathways. This article describes each pathway, and by drawing on the experience of previous coronavirus epidemics and recent recessions, attempts to estimate the likelihood that claims due to mental health disorders will increase.

Address: 1000 Rue de la Gauchetière Ouest, 20^{e} étage, Montréal Québec, H3B 4W5; ph: 514.392.5069; tmeagher@munichre.ca.

Correspondent: Timothy Meagher, MB, FRCP(C); Vice-President and Medical Director, Munich Re, Montréal; Associate Professor of Medicine, McGill University, Montréal, Québec.

Key words: COVID-19, mental health, coronavirus pandemic, neuropsychiatric manifestations, disability insurance.

Amongst the myriad presentations of COVID-19, neuropsychiatric manifestations have been recorded. Whilst recovery from acute infection is the most common outcome, survivors now report ongoing symptoms, varying from dyspnea to profound fatigue to neurocognitive deficits. If full recovery is delayed, insurers may see an increase in disability claims for both physical and psychiatric complications.

Confinement has already had a negative impact on population mental health. However, the long-term consequences are unknown. Similarly, the current economic recession may worsen mental health. While deterioration in mental health has been recorded in previous recessions, is it reasonable to expect that this experience will be repeated?

Disability due to mental health disorders has been increasing in many countries over the past years. The COVID-19 pandemic may worsen this trend as a result of 3 different and at times overlapping pathways: 1) the direct impact of COVID-19 infection, 2) the impact of confinement and social distancing, and 3) the effect of an economic recession.

Pathway 1. Neuropsychiatric Consequences of COVID-19

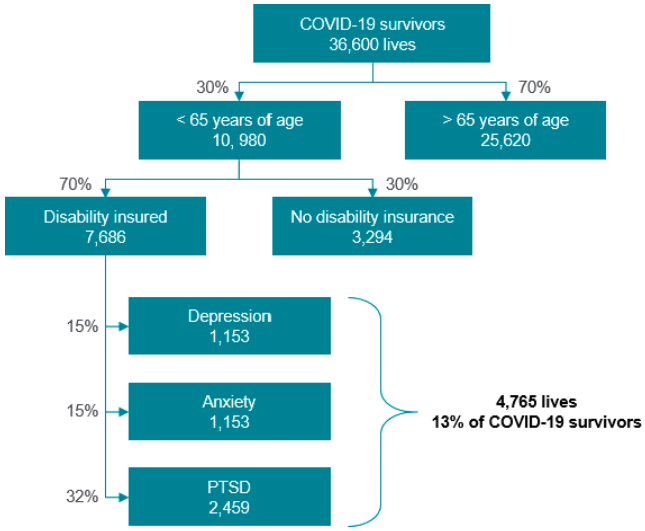
Neuropsychiatric complications, ie, psychiatric disorders resulting from damage to brain tissue, have been reported in many COVID-19 studies and preprints from China, Europe and North America. Most of these studies involve hospitalized patients, many in

intensive care unit settings. Common presentations include confusion, agitation, impaired consciousness, anxiety and depressed mood. The natural history of COVID-19 neuropsychiatric presentations is unknown. Should the symptoms be protracted and lead to established psychiatric diagnoses increases in long-term disability may result.

Coronaviruses have been responsible for 2 previous epidemics, SARS in 2003 and MERS in 2011. A June 2020 systematic review and meta-analysis of the psychiatric and neuropsychiatric consequences of SARS, MERS and COVID-19 described the acute manifestations of all three.[1] In the 25 studies that reviewed the presenting symptoms of SARS and MERS, anxiety, impaired concentration, impaired memory, depressed mood, and confusion were the commonest. Thus, all 3 coronavirus infections appear to present a similar tableau of neuropsychiatric symptoms.

The same review also tabulated, in 40 studies, the long-term complications of SARS and MERS, with follow-up times ranging from 60 days to 12 years. The point prevalence of anxiety disorder was 14.8% (95% CI 11.1-19.4) at a mean follow-up of 11.6 months (SD 12.6); the point prevalence of depression was 14.9% (95% CI 12.1-18.2) at a mean follow-up of 22.6 months (SD 16.7); and the point prevalence of post-traumatic stress disorder was 32.2% (95% CI 23.7-42.0) at a mean follow-up of 33.6 months (SD 14.2). Severity of these 3 conditions was not formally assessed, but the authors pointed out that mean scores for depression and anxiety on standard scales were below clinical cut-offs, suggesting that milder variants of the diagnosed disorders were common. The authors also reported that 77% of survivors had returned to work at a mean follow-up time of 35.3 months, suggesting that about 23% of survivors had disabling long-term symptoms or had opted not to return to work.

This systematic review provides useful insights into the long-term neuropsychiatric complications of SARS and MERS and raises the possibility of similar outcomes with COVID-19. However, there are many caveats. The studies evaluated did not describe pre-epidemic health status, self-reporting was common, different diagnostic scales were used and the follow-up periods were highly variable. Thus, the possibility of bias was high. Furthermore, while SARS and MERS present in the same manner to COVID-19, they are imperfect proxies. COVID-19 is a different disease with different epidemiology, complications and outcomes. It is quite conceivable that its long-term sequelae will be different.



Calculation of percentage of hospitalized COVID-19 survivors carrying disability insurance.

Notwithstanding the quality of the SARS/MERS data how might one estimate the impact of COVID-19 on disability insurance? Let us assume that it is primarily those who have been hospitalized who are most likely to develop neuropsychiatric complications. If the number of hospitalized survivors is not available from national or state statistics, it can be estimated from the number of deaths.

Using Canadian data to illustrate (see Figure), there have been 9150 deaths in Canada at time of writing. The in-hospital mortality is approximately 20%. Thus, there are 36,600 survivors. COVID-19 selectively affects the elderly. Approximately 70% of survivors (25,620) will be over the age of 65

and will no longer carry disability coverage; 30% (10,980) will be under age 65. Of these, about 70% (7686) carry disability insurance – the Canadian average. (The true percentage of survivors carrying disability insurance is likely to be lower as most survivors will have a chronic illness that predisposed to COVID-19 infection and will not be insured due to a pre-existing illness. As this number is difficult to estimate, it will not be included in this calculation.) In the SARS and MERS experience, about 15% of survivors suffered from depression, 15% from anxiety disorder and 32% had post-traumatic stress disorder.[1] Applying this experience to Canadian survivors, 1152 individuals would suffer from depression, 1152 from anxiety, and 2459 from post-traumatic stress disorder. If one adds these 3 groups together, one arrives at 4763 survivors with a psychiatric diagnosis who carry disability insurance, or 13% of all survivors. This is likely an upper range number as the impact of comorbidity on insurability has been excluded. Also, some percentage of these survivors will not be limited by their symptoms and will choose to continue working.

This exercise suggests that, in a Canadian context, fewer than 13% and probably fewer than 10% of all hospitalized survivors will claim for disability payment for a mental health disorder.

Pathway 2. Impact of Confinement and Social Distancing on Mental Health

In response to the rapid spread of COVID-19, most countries adopted a confinement strategy to mitigate spread. Confinement began in February-March 2020 in Europe and North America and was applied with differing degrees of rigour depending on local circumstances. While most countries have softened the confinement rules over time, *social distancing*, which could be considered *confinement-lite*, remains in place.

During confinement population mental health is widely considered to have deteriorated. Statistics Canada, based on a crowdsourced sample of 46,000 participants, reported that 24% of Canadians declared their mental health as "fair/poor" between April and May 2020 compared to 4% in the 2018 Canadian Community Health Survey of 65,000 respondents. Deterioration was more marked at younger ages and minimal over age 65.[3]

A similar trend was noted in the United States. The CDC reported that 41% of 5412 US adults reported an adverse mental or behavioural health problem between June 24-30, 2020.[4] Amongst these, 30% had symptoms of anxiety or depressive disorder, 26% symptoms of PTSD, and 10% reported having seriously considered suicide in the 30 days before the survey. Symptoms were most common in the 18-24 age group and prevalence decreased with increasing age. Essential workers, unpaid caregivers and those with preceding mental health disorders were most at risk. Compared with an equivalent time period in 2019, the prevalence of symptoms of anxiety were 3 times higher; those of depression 4 times higher.

A UK national survey[5] conducted between April 24-30, 2020 reported that 29% of 15,530 respondents met the study criteria for a general psychiatric disorder. Women and younger individuals were at higher risk, whereas employment and living with a partner were protective.

A systematic review of 20 studies from 6 Asian and 2 European countries evaluated the impact of COVID-19 on the general public.[6] The overall conclusion was that mental health had deteriorated. However, prevalence numbers varied widely and longitudinal data were almost absent. A single study with longitudinal data found no difference in depression, anxiety or stress during a period with high COVID-19 numbers compared to a period with low numbers.

Interestingly, Canadian life insurers reported an overall reduction in short-term disability claim incidence in the months of March to June 2020, with a concurrent reduction in mental health-related claims (Munich

Re internal data). This surprising finding may be partially explained by government income subsidies instituted at the outset of confinement and by contractual temporary suspension of benefits by employers until return to work is authorized.

If we accept that general population mental health has deteriorated during the COVID-19 epidemic, when does it recover? Evidence from previous confinement periods is sparse. A recent preprint described the presence of anxiety, depression and PTSD/stress in the general population during and after epidemics since 2000, including SARS, MERS, Ebola, H1N1, H7N9 and COVID-19.[7] Of 2855 articles screened, 74 were included for review of which 7 provided follow-up data on 19,385 subjects up to 1 year post acute illness. Depression was reported in 3.7%-18.7% and PTSD in 4%-11%. The authors noted that rates of mental health problems varied widely across epidemics, countries and risk groups. Some studies show both high and persistent rates in populations directly affected by quarantine and/or the threat of infection; others report minor effects. Proximity to epidemic epicentre, quarantine, infected family members all increased the likelihood of mental health problem. Similarly, female sex, chronic physical illness and poor self-rated health were also risk factors. As with many studies of this type sampling techniques varied and many different psychiatric instruments and questionnaires were used, making comparisons difficult.

Health Care Workers represent a specific subset of the general population by virtue of their proximity to COVID-19 infected individuals and their increased personal risk of infection. A recent systematic review of 30 reports published between December 2019 and May 2020 examined mental health in healthcare providers.[8] The prevalence of depressive symptoms ranged from 20%-40% and those of anxiety from 30%-70%. Similarly, high numbers were noted in a Canadian study following the SARS pandemic, where 29%-35% of healthcare workers experienced a high degree of stress.[9] Further, a Canadian study reported higher levels of burnout, psychological distress and posttraumatic distress at 13-26 months amongst healthcare workers in hospitals where SARS patients received care, compared to hospitals that did not admit patients with SARS.[10]

In summary, while the COVID-19 pandemic appears to have negatively affected mental health among the general public, the evidence is largely based on self-reporting at single points in time and thus open to substantial bias. Nonetheless, the self-reported deterioration is consistent across countries and is striking in its amplitude. Evidence from past epidemics suggests that deterioration in mental health persists up to a year. Based on this experience, it is likely that current levels of reported poor mental health will extend through 2021, at a minimum. Extrapolation from current COVID-19 evidence and from past experience to an insured population is particularly difficult, as other than healthcare workers, groups at particular risk are not well defined. Nor is there any data to identify what percentage of those currently reporting worsening mental health will apply for disability benefit. Nonetheless, it is highly likely that healthcare workers will experience a disproportionately high level of mental health disorder and will apply for disability insurance. Otherwise, it is virtually impossible to predict if population confinement will have any material impact on disability claims incidence.

Pathway 3. Impact of Economic Recession on Mental Health

While there is now consensus that mental health deteriorates during recessions, the literature is at times contradictory. There are several reasons for this. The question: "Does mental health deteriorate during an economic recession?" is misleadingly simple. Mental health and economic recession are broad terms. Poor mental health may describe a collection of self-reported symptoms. It may also describe several distinct psychiatric

disorders. The telephone and internet questionnaires that impute a diagnosis from the former may not agree with the clinician who diagnoses the latter. Consequently, quoted prevalence figures may vary widely.

An economic recession is a reduction in economic activity that provokes a series of adverse outcomes such as job or housing loss, financial losses of different sorts and social upheaval. The cause, duration and amplitude of each outcome is highly variable, as is the speed of recovery. Recessionary impacts also differ by country and by political and health system. For example, in some countries social nets are expanded during recessions; in others they contract. Thus, it is hardly surprising that studies that evaluate the mental health impact of different economic outcomes at different timepoints provide inconsistent conclusions.

STUDIES OF GENERAL POPULATION

Studies of the general population during the last major recession in 2008-2010 show that mental health deteriorated. The Longitudinal Midlife in the United States study[11] examined the impact of the "Great Recession" on symptoms of depression, anxiety in 7108 adults ages 25-75, collecting data before (2003-2004) and after (2012-2013) the Great Recession. At the population level, the prevalence of symptoms of depression, anxiety and panic remained stable or decreased over time. At the individual level, job loss, financial or housing loss was associated with a 1.3 to 1.5 higher odds of symptoms of depression, anxiety or panic. This effect lasted 1-3 years. While less privileged groups (eg, lower education, income, insecure employment) and women were especially vulnerable, a stronger association for anxiety and substance abuse was noted in the more privileged. Those who experienced 4 or more adverse economic factors had the highest prevalence of symptoms.

A Canadian study investigated the 12-month prevalence of major depressive disorder among 3579 randomly selected employed individuals in Alberta at 3 time points in 2008 and 2009, the first pre-recession, the second and third during the recession.[12] Recorded rates were 5.1%, 6.8% and 7.6% ($p = 0.03$), respectively. The lifetime prevalence of dysthymia at the same 3 points was 0.4%, 0.7% and 1.5% ($p = 0.006$). During every 6 months, the prevalence of major depressive disorder increased by 1%. Men and participants who were married or in common-law relationships were particularly at risk. Interestingly, no differences were recorded for 12-month prevalence of social phobia, panic disorder or generalized anxiety disorder.

A systematic review of 41 studies evaluated the impact of the 2008 financial crisis in Europe.[13] Most, but not all, studies found an association between recession indicators and poor mental health. However, disagreement both between and within countries were noted. Bias was a significant problem in almost 75% of the articles reviewed, thus limiting the ability to draw conclusions.

A further review of 42 studies examined the impact of the Great Recession in multiple countries.[14] Loss of job, income, or investment wealth conveyed excess risk of psychological distress in both Europe and the United States at the individual level. At the aggregate level, surveys reported worse mental health in the United States; whereas impact on mental health in Europe was considered moderate. The authors suggested that Americans were more adversely affected than Europeans due to differences in social programs. Cross-national differences may also have been affected by the unique housing crisis in the United States.

A further systematic review of mental health outcomes during economic recessions in multiple countries between 2004 and 2014 evaluated 101 of 7321 peer-reviewed studies.[15] It reported an overall deterioration of mental health with increased rates of depression, anxiety, somatoform disorders and substance abuse. It concluded that economic recessions are "possibly associated with a higher prevalence of mental health problems." The analysis also illustrated that the

economic impact on mental health is likely regional and cultural and affected by differences in both health and political systems. Unemployment was identified as the major risk factor.

Overall, these studies suggest that population mental health deteriorates during a recession, mainly precipitated by job loss. However, they provide little information about illness severity and less still about the prevalence of mental health disability.

INSURED LIVES DATA

US insurers reported a 10%-15% increase in group disability claims during the 2007-2009 recession, with lag times stretching up to 18 months. Numbers returned to normal with the onset of the economic expansion in 2014. Interestingly, mental health claims did not explain the increase (Munich Re, internal data).

A 2018 Society of Actuaries Study (SOA) that evaluated group disability claim data between 2004 and 2012 showed that termination rates deteriorated during the Great Recession and recovered during subsequent years.[16] A 2019 SOA study of individual disability claims from 2010-2014 did not demonstrate an increase in disability claims associated with unemployment; however, when unemployment decreased a reduction in disability claims was noted.[17] The causes of disability are not discussed; thus, any linkage between mental health and these varied observations is unclear.

Canadian insurers reported an increase in disability incidence in late 2007, persisting well into 2008, consistent with the shorter duration of the Canadian recession. Breakdown by cause of claim is not available. Thus, it is unclear if mental health disorders were disproportionately represented (Munich Re, internal data).

An analysis of Australian disability claims data between 1986 and 2001 demonstrated a close linkage between unemployment and disability claim incidence.[18] On average, a 1% increase in the unemployment rate was associated with a 2.3% increase in claims for males and a 5.7% increase in claims for females. However, no linkage with mental health disability was proposed.

German insurance data suggest that the 2008 recession was not associated with an increase in disability. In contrast, Dutch data demonstrated a definite increase of disability at the onset of the recession, with recovery in the post-recession years. The causes of the increase are not recorded. UK data suggest that the impact of the recession was minimal (for all countries, Munich Re, internal data).

In summary, evidence from previous epidemics suggest that economic recessions and especially unemployment are associated with worsening mental health in most countries, with effects lasting 1-3 years. Whether this leads to disability is unclear. Insurance data from North America, Australia and the Netherlands report an increase in disability incidence during recessionary periods. However, it is not clear if this is due to worsening mental health.

CONCLUSION

While COVID-19 infection clearly presents with neuropsychiatric symptoms (pathway 1), the durability and severity of these will not be fully appreciated for some time. Previous coronavirus epidemics suggest that as many as 25% of survivors will have symptoms after 1 year. However, COVID-19 differs in many ways to SARS and MERS. Therefore, extrapolation to COVID-19 could be misleading. Amongst the survivors of severe COVID-19 infection, the elderly, those with co-morbid medical problems, and the economically disadvantaged will constitute the majority. Therefore, it is likely that the impact on an insured population, and on disability insurance, will be relatively small. The impact of confinement (pathway 2) on disability insurance is much more difficult to estimate. While population mental health appears to have deteriorated during strict con-

finement, this observation is largely based on self-reporting, with its inherent shortcomings. The prevalence of clinically diagnosed psychiatric illness, and more importantly, its impact on disability, remains unknown. Similarly, it is unclear how long symptoms provoked by confinement will last. Amongst the general population, healthcare workers constitute a special subset. They are clearly at the greatest risk and are the group most likely to experience higher levels of mental health disability. The current economic recession (pathway 3) may well be the most important determinant of future mental health disability. Evidence from previous recessions suggests that mental health deteriorates. However, there is limited evidence that these deteriorations lead to disability. To some extent this reflects study design. The focus of research is primarily on disease prevalence, and less frequently on disease severity. Disabling outcomes, the focus of interest to the insurance world, have not been studied. Insurance data from the United States, Canada and Australia suggest that disability increases during recessions. However, there is no evidence that worsening mental health is the culprit. Caution is required here. Causes of disability are not always accurately recorded. Further, mental health disability may be cloaked in somatic symptoms, such as musculoskeletal pain or fatigue states. This may be a situation of "absence of evidence is not evidence of absence." In sum, the evidence supporting increased levels of mental illness via all 3 pathways, particularly the latter 2, is compelling. It seems very likely that we will see a coincident increase in mental health disability.

REFERENCES

1. Rogers J, Chesney E, Oliver D, et al. Psychiatric and neuropsychiatric presentations associated with severe coronavirus infections: a systematic review and meta-analysis with comparison to the COVID-19 pandemic. *Lancet Psychiatry*. 2020;7: 611-627.
2. Helms J, Kremer S, Merdji H, et al. Neurological Features in Severe SARS-CoV-2 Infection. *N Engl J Med*. 2020;382:2268-2270.
3. Statistics Canada. https://www150.statcan.gc.ca/n1/daily-quotidien/200527/dq200527b-eng.htm
4. McGinty E, Presskreischer R, Han H, Barry C. Psychological Distress and Loneliness Reported by US Adults in 2018 and April 2020. *JAMA*. 2020;324: 93-94.
5. Li L-Z, Wang S. Prevalence and predictors of general psychiatric disorders and loneliness during COVID-19 in the United Kingdom. *Psychiatry Res*. 2020;291:113267. doi: 10.1016/j.psychres.2020.113267
6. Vindegaard N, Benros ME. COVID-19 pandemic and mental health consequences: Systematic review of the current evidence. *Brain Behav Immun*. 2020;89:531-542. doi: 10.1016/j.bbi.2020.05.048
7. Zurcher S, Kerksieck P, Adamus C, et al. Prevalence of Mental Health Problems During Virus Epidemics in the General Public, Health Care Workers and Survivors: A Rapid Review of the Evidence. *Front Public Health*. 2020;8:560389. doi:10.3389/fpubh.2020.560389.
8. Maunder R. The experience of the 2003 SARS outbreak as traumatic stress among frontline healthcare workers in Toronto: lessons learned. *Philos Trans R Soc Lond B Biol Sci.* 2004;359:1117-1125. doi: 10.1098/rstb.2004.1483.
9. Braquehais M, Vargas-Cáceres S, Gómez-Durán E, et al. The impact of the COVID-19 pandemic on the mental health of healthcare professionals. *QJM*. 2020:hcaa207. doi.org/10.1093/qjmed/hcaa207.
10. Maunder R. Long-term Psychological and Occupational Effects of Providing Hospital Healthcare during SARS outbreak. *Emerg Infect Dis.* 2006;12:1924-1932.
11. Forbes M, Krueger R. The Great Recession and Mental Health in the United States. *Clin Psychol Sci*. 2019;7:900-913.
12. Wang J, Smailes E, Sareen J, Fick GH, Schmitz N, Patten SB. The prevalence of Mental Disorders in the Working Population Over the Period of Global Economic Crisis. *Can J Psychiatry*. 2010;55: 598-605.
13. Parmar D, Stavropoulou C, Ioannidis JP, et al. Health outcomes during the 2008 financial crisis in Europe: systematic literature review. *BMJ*. 2016;354:i4588.
14. Margerison-Zilko et al. Health Impacts of the Great Recession: A Critical Review. *Curr Epidemiol Rep*. 2016;3:81-91.
15. Frasquilho D, Matos MG, Salonna F, et al. Mental Health Outcomes in times of economic recession: a systematic literature review. *BMC Public Health*. 2015;16:115.

16. Society of Actuaries: 2018 Group Long-Term Disability Experience Study Report (2018). Available at: https://www.soa.org/resources/experience-studies/2018/2018-gltd-experience-report/
17. Society of Actuaries: Analysis of Claim Incidence Experience from 2006 to 2014 (2019). Available at: https://www.soa.org/resources/experience-studies/2019/claim-incidence-report
18. Khemka G, Roberts S, Higgins T. The Impact of Changes to the Unemployment Rate on Australian Disability Income Insurance Claim Incidence. *Risks*. 2017;5:17.