

Health and Wellbeing Deterioration in COVID-19: A small model exploring resiliency development during multiple waves of crisis

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Resiliency describes how the system recovers from crisis events (Barzilay et al., 2020; Bryce et al., 2020; Leon and Kopainsky, 2019; Meyer, 1982). The COVID-19 mental health and wellbeing surveillance report (Office for Health Improvement & Disparities, 2021) published by Public Health England reveals risks of 'up-and-down' nature in mental health and wellbeing during the pandemic, indicating potential accumulative risks of multiple crises on the systems recovery.

In the first wave, there was a significant rise in distress from 20.7% to 29.8% compared to the pre-pandemic. During October 2020 and February 2021, the second deterioration in population mental health and wellbeing is observed. By the end of March 2021, the distress levels increased to 27.1%, showing that the system has not developed sufficient resilience facing multiple shocks. Drawing from the reflections of COVID-19, we developed a small system dynamics model exploring how multiple waves of crises challenge individual and organisation resilience during a long pandemic (see Figure 1).

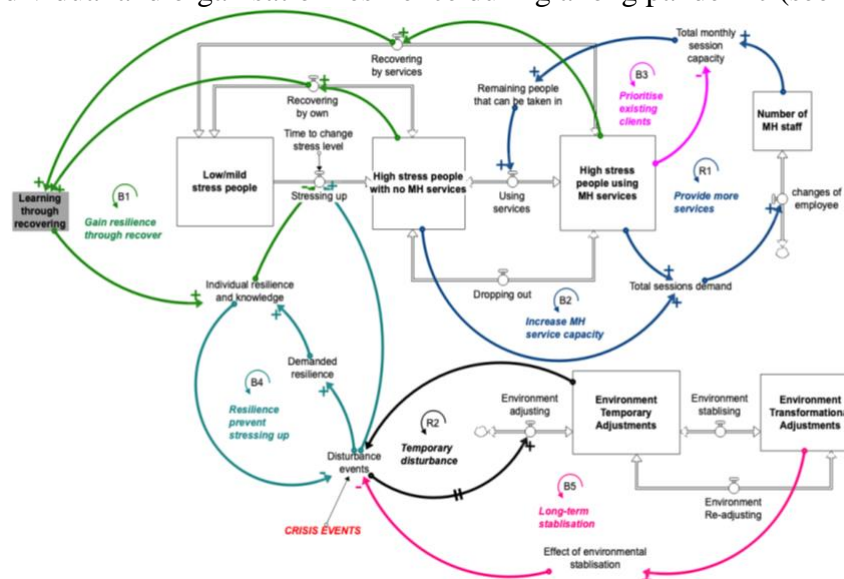


Figure 1 Causal loop diagram of individual and organisational resilience facing multiple crisis shocks

Through the small simulation model to explore how multiple waves of crisis can increase the accumulative risks of mental health and well-being deterioration (see Figure 2).

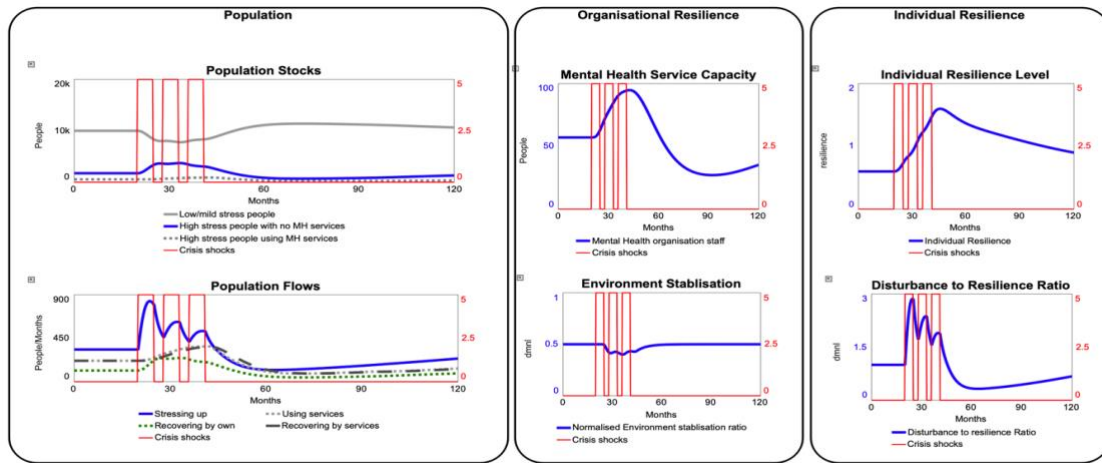


Figure 2 Multiple crisis shocks: Behaviour of population stocks (left), organisational (middle) and individual resilience. The red line represents waves of crisis in the model.

We found that crisis events can pose significant challenges to the mental health service and push individuals to adjust to disturbing environments quickly. Also, ongoing environment adjustment and limited service provision resource can potentially increase accumulative risks from multiple crises, resulting in deteriorations in mental health and well-being. When organisations provide short-term solutions, it can also add to the accumulative disturbances individuals face during the crisis. Organisational quick response and continuous policy changes can potentially lead to the unintended consequence of increasing the number of disturbances that individuals need to adjust to.

Regarding interventions, we found that prevention and mental health system capacity remains the essential solution in decreasing the number of stressed people, suggesting that the mental health service system needs to allocate sufficient resources and prevention measurements throughout crisis waves. A combination of systematic mental health prevention and capacity and ongoing learning seems to be a promising approach to decrease the number of stressing up people during the crisis.

For limitations, while we use the COVID-19 pandemic as an example to explore the interconnections between individual and organisational resilience, the model is not calibrated with empirical data. The model does not consider social-economic variations. We conceptualised organisational resiliency using general mental health service provision. In practice, there are broader approaches to mental health service provision by different agencies such as crisis intervention and community-based mental health services. Agencies that provide community mental health services and care might have more significant challenges in responding to the crisis interventions during multiple pandemic waves. Future research can integrate broader service provision challenges by different agencies.

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