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EVIDENCE BRIEF

Disaster Recovery Frameworks: Common Themes to Inform COVID-19 Recovery Efforts

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Key Messages

- Examining population recovery after a disaster offers an opportunity to pinpoint lessons learned and improve the resiliency of systems against future disasters. Various frameworks exist to guide resilience-based recovery at the population level after an emergency or disaster.
- The most frequently reported considerations for successful recovery and resilience building were identified from frameworks in the literature. The considerations were grouped into ten themes, organized according to the inter-related levels of systems thinking: micro-, meso- and macro-level.
- The micro-level relates to assessing disaster recovery needs at the individual level (i.e., risk screening), the meso-level is concerned with local community factors such as social resources, communication and community-centred action, and the macro-level refers to the importance of cultural awareness factors and upstream social determinants of health.
- Resilience-building is optimised when the various levels of a system work together in a harmonious way. Population-level disaster recovery and resilience-building occurs through a combination of the identified themes and through interventions used within disaster recovery frameworks. Incorporating these themes into COVID-19 pandemic recovery efforts will ensure recovery at all levels of society (individual, community, systems).

Issue and Research Question

The Coronavirus Disease 2019 (COVID-19) pandemic has been reported to be the health crisis of our lifetime, and is responsible for taking the lives of millions of people globally.[2,3] The pandemic's impacts also include strained health care and public health systems, and disruptions to education systems, social cohesion and the economy. As some jurisdictions begin to plan for a process of recovery and managing an ongoing pandemic, there is a need to identify approaches for population recovery and resilience-building.

While resilience-building initiatives ideally take place before a disaster, resilience-building should also take place while recovering from a disaster.[4] Resilience can take on numerous definitions, and there are different models or tools to measure resilience depending on the system being analyzed.[5] The United Nations Officer for Disaster Risk Reduction offers the following definition of resilience:

> "The ability of a system, community or society exposed to hazards to resist, absorb, accommodate, adapt to, transform and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions through risk management."[1]

The ability of communities to recover from emergencies is an area of focus for emergency preparedness and disaster management.[4] Risk reduction and disaster recovery frameworks offer measures, metrics and tools that can be useful to guide the planning of COVID-19 recovery and other population recovery efforts. For example, the United Nations (UN) signed the *Sendai Framework for Disaster Risk Reduction 2015–2030* in 2015, marking the first-ever agreement among member states to reduce the risk of disasters and share responsibility for risk reduction and recovery among its member states.[4] This Framework has a focus on risk reduction activities to enhance resilience, and offers targets and indicators to measure progress on risk reduction.[4] Frameworks, like the Sendai Framework, can be examined to identify common areas among them to inform future population disaster recovery efforts.

This Evidence Brief aims to identify frequent elements among disaster recovery frameworks used for population-level recovery after an emergency or disaster. The main objective is to examine the elements within the frameworks by using a thematic content analysis, to understand and guide COVID-19 pandemic population recovery and resilience-building efforts.

Methods

Literature Search

A literature search was conducted on June 25, 2021 by Public Health Ontario (PHO) Library Services for review-level articles in the MEDLINE database published between 2000 to present. Review articles were eligible for inclusion if they focused on frameworks for recovery and building resilience at a population level after an emergency/disaster of both infectious and non-infectious origins. Articles were excluded if they did not take place after an emergency/disaster, were not applied at the population level, did not focus on recovery or building resilience, applied or developed for non-Organisation for Economic Co-operation and Development (OECD) countries. Mental health interventions delivered as frameworks (e.g. psychological first aid) were excluded. For the purpose of this document, armed conflicts were not considered. The full search strategy is available upon request.

Thematic Analysis

The content of each included article was examined by two independent reviewers. The variables extracted from each article included the author, year, type of disaster, population and framework (see Appendix A). To identify common themes among the frameworks, a content analysis was conducted by three project team members. The team members analyzed content of each framework to identify common themes, and discrepancies were resolved through discussion.

The final themes identified are described in the findings below and are summarized into three interrelated micro-, meso- and macro-levels. These three levels are consistent with the key elements of systems thinking according to the World Health Organization (WHO) *Guidance on Research Methods for Health Emergency and Disaster Risk Management*.[6] The WHO report that systems are made up of different interdependent components and actors or stakeholders, and a systems thinking approach can be used to examine disaster management and recovery in terms of a dynamic, interconnected collection of factors.[6] Micro level factors are associated with individuals or households, whereas meso and macro levels refer to factors at the organizational or community and societal levels, respectively.[6] For this Evidence Brief, these levels are used to understand their level of impact and action within population recovery efforts (i.e., micro/individual, meso/community, macro/systemic).

Main Findings

The PHO Library search yielded 304 articles. After title and abstract screening, 73 articles were eligible for full text screening. Detailed inclusion/exclusion criteria were applied and a final set of 17 review-level articles were included in this Evidence Brief. From these 17 included articles, 19 frameworks were identified and information from them was extracted for content analysis (See Appendix A). Within the 19 frameworks, 17 were not disaster-specific, one focused on nuclear disasters,[7] and another on terrorism.[8]

Across the 19 frameworks, five were specific to the pediatric population,[9-13] and one was specific to the geriatric population.[14] If a framework did not indicate a specific population it was assumed to be for the general population. Mental health was the focus of 12 frameworks,[7,8,10-13,15-17] community was the focus of eight frameworks,[7,15,18-21] and the economy was the focus of one framework.[22]

Two frameworks had overlapping foci of mental health and community.[7,15] Stepped-models of care were commonly referenced in frameworks that focused on mental health. Stepped-models of care organize interventions by increasing intensity, with the goal of matching patients to an appropriate level of evidence-based care with the option to move onto more intensive treatments if needed.[23]

Some examples of frameworks identified in the literature are the *LINC Model to Enhance Community Resilience*, which mobilizes local change agents to serve as links between families, communities and professionals during disaster recovery,[20] and the *Framework for Family Resilience Adapted to Communities* which focuses on strengths under stress when dealing with a crisis or prolonged adversity.[21] Please refer to **Appendix A** for the names of the 19 identified frameworks and their corresponding details.

A total of ten common themes were identified across the 19 frameworks. Given that resilience can be defined and measured in numerous ways, the decision was made to not explicitly identify resilience-building as a theme. Instead, resilience-building can be captured through a combination of existing themes (e.g. rebuilding community to include increased economic opportunities for priority groups) or in the interventions chosen to be used within the framework (e.g. teaching coping and emotional regulation skills to children post-disaster). Interventions also encompass a broad range of activities which focus on addressing issues or pathology as well as building on existing strengths and teaching new skills.

Common Themes across Disaster Recovery Frameworks: Micro-, Meso- and Macro-Level

To understand the ten themes identified across the disaster recovery frameworks and how they interrelate, they were grouped according to micro-, meso- and macro-level categories, consistent with the WHO approach, described above.[6] It is important to note that many of these themes can and do operate at multiple levels, as the micro- (i.e., individual), meso- (i.e., community) and macro- (i.e., systemic) levels are all interrelated. We therefore added a separate category for multi-level themes.

MICRO-LEVEL THEMES

At the micro-level, disaster recovery frameworks focus on delivering interventions that address needs at the individual-level:

- **Addressing Individualized Needs**: Especially common in stepped-models of care and mental health-focused frameworks, interventions should address identified needs rather than a 'one-size-fits-all approach' and recognize the different needs of individuals. Generally this entails offering services and building capacities that are applicable to a majority of the population (e.g. psychological first aid) before offering specialized services that may be necessary (e.g. cognitive behavioural therapy for those with post-traumatic stress disorder).[8-14,16,17]

- **Risk Stratification/Screening:** Highly related to the individualized needs theme, risk stratification (i.e., screening) helps to identify the appropriate level of treatment required for individuals, typically offered in a stepped-model of care for mental health, allowing for more specialized treatment to be offered to the individuals or groups that need it the most.[8-14,16,17]

MESO-LEVEL THEMES

At the meso-level, disaster recovery frameworks focus on meaningful engagement to support a community's recovery:

- **Acknowledgment/Validation:** This theme recognizes that the group affected by the disaster has their own shared identity, which communication and interventions need to be aware of and incorporate to ensure effectiveness.[18] Additionally, this theme acknowledges the importance of recognizing that it is normal for a community to have an emotional response to a disaster.[15,21]

- **Active Communication:** This theme included concepts such as providing accurate and relevant information,[7,11,15,18,21,22] listening to ideas and feedback from communities,[15,18,19,22] utilizing varied mediums of communication,[15,16] and risk communication (specifically noted in nuclear disasters).[7]

- **Community-Centred:** Recovery plans should be made specifically for the target community considering the local context and purposefully involve the community (e.g. through including community leadership or allowing the community to set the recovery goals).[7,11,15-17,19-22] There should also be a focus on utilizing a community's strengths in the recovery plan.[19,20] The community-centred theme works in tandem with the active communication theme previously discussed in order to solicit ideas and feedback from the community. Plans should use relevant data and metrics for the community,[7,16,19,22] including community-based participatory research.[19]

- **Social Resources:** This meso-level theme highlights the importance of the social aspect of the recovery processes both in terms of strengthening, restoring and utilizing existing relations along with the creation of new ones.

MACRO-LEVEL THEMES

At the macro-level, frameworks focus on the contextual and systemic factors that play a role in the recovery process:

- **Cultural Awareness:** Cultural awareness works to complement the micro- and meso-level themes, by ensuring interventions are designed with attention to community input and the target population's culture.[10,11,16,18,19] This theme also includes recognizing that culture influences how the disaster is experienced and recovered from.[9,10,17,19-21]

- **Recognizing Social Determinants of Health:** The social determinants of health within a community or population will determine how the disaster is experienced and recovered from.[9,19,20] Understanding these factors provide areas for recovery efforts to focus on, and should be considered when designing interventions for the recovery process to ensure efforts are equitable.[9,11,19]

MULTI-LEVEL THEMES

Encompassing all the previous levels, frameworks focus on the recovery process being multi-level and ongoing:

- **Longitudinal:** Acknowledges that the recovery process does not necessarily have a discrete end point and recovery planning should account for such,[18-20,22] especially being either implied or stated around the identification and treatment of mental health concerns.[8,10-14,16,17]

- **Multi-Level Recovery:** Recovery plans should target or incorporate resources from various structural levels (e.g. family/caregiver, organizational, community, policy, financial, etc.).[7,9,11,17,19-22]

Discussion

Disaster and emergency response, recovery and resilience-building is a complex process that occurs through multiple levels and components, complementing each other. The learnings can be applied broadly to public health recovery efforts.

There was significant conceptual overlap between the themes, which reflects the complexity of applying the frameworks and the inter-relatedness of the concepts contained within the frameworks. This overlap can also be seen with the area of focus of the various frameworks (i.e. community, mental health, the economy), as various aspects of society impact one another during the recovery processes.

Among the recovery frameworks that reported a population of interest, the pediatric and geriatric populations were identified as groups that require particular attention throughout the recovery process, as they may be disproportionately impacted by disasters. The applications of recovery frameworks to these populations mentioned the importance of tailoring interventions to account for unique needs. Some examples of important considerations were: appropriate screening tools and interventions for a child's developmental level,[11] and acknowledging the lack of evidence to guide treatment decisions with older adults.[14]

In terms of the pediatric population's recovery, many articles discussed the important roles of schools and relationship-building. This includes supporting the healthy recovery of parents/caregivers, providing education on how children respond to disasters, and leveraging school settings to assist with post-disaster risk stratification among children.[9,11-13,19] Schools are a general community resource for a population recovering from a disaster (e.g. can restore a sense of regularity and provide social support),[12,17,19] and they can also act as a centrally accessible location to offer comprehensive services such as screening, skill teaching and treatment for the pediatric population and potentially their families.[9,11-13,19]

The social determinants of health emerged as a common theme across the recovery frameworks. These factors play a role in influencing a community or individual's resilience after a disaster, thereby providing an opportunity for intervention to ensure the recovery process is equitable.[21,24] Disaster recovery literature offers examples of equity-oriented measures to assess community recovery after a disaster, including the generation of specific plans for vulnerable populations, the re-establishment of social networks and community facilities, and improving the built environment.[25]

The themes identified from the recovery frameworks align the six principles of a trauma-informed approach: safety, trustworthiness/transparency, peer support, collaboration, empowerment, and cultural, historical and gender issues.[26] This alignment indicates the importance of taking a trauma-informed approach to disaster recovery efforts. Trauma is a widespread, harmful and costly public health issue that can occur as a result of emergencies, disasters, or other emotionally harmful experiences.[27] To optimize equity within disaster recovery efforts, support should be provided in a context that is trauma-informed and addresses the needs of groups disproportionately impacted by the disaster.

Overall, the themes that emerged from the included frameworks can support population recovery efforts and resilience-building as part of COVID-19 pandemic recovery. The themes align with systems thinking and trauma-informed approaches, which suggests these concepts can be beneficial for ensuring that COVID-19 pandemic recovery efforts are equitable and address recovery-related needs and issues at the micro/individual, meso/community and macro/system levels.

Strengths and Limitations

Strengths of this report include the systematic search and process to identify the frameworks and themes. The themes were generated across the identified frameworks using a consensus process. The frameworks' details and the themes were limited to the level of reporting in the review articles. However, each theme has at least three supporting citations, increasing their validity.

Limitations of this report include using a single database search, using only English language articles and excluding articles focusing on non-OECD countries. Due to time constraints, a grey literature search was not conducted, which may have missed additional frameworks for analysis. Relevant articles may have been excluded as a single reviewer was primarily responsible for screening.

Implications for Practice

- Recovering from a disaster is a complex process that requires action at the individual-, community- and systems-level. The population recovery process involves numerous considerations which are illustrated through the ten high-level themes identified from disaster recovery frameworks in the peer-reviewed literature. Given the complexity and broad impact of COVID-19 on the population, a whole-of-society approach to recovery will be important.

- The themes that emerged from the disaster recovery frameworks can support the planning for recovery efforts and resilience-building as part of COVID-19 pandemic recovery at the population-level. The themes can be used as a guide to ensure that COVID-19 pandemic recovery efforts are tailored to population recovery needs at the micro/individual, meso/community and macro/systemic levels.

- Disaster recovery and resilience-building can occur by using a combination of the identified themes in disaster recovery planning efforts. The themes that emerged from the disaster recovery frameworks illustrate the broad concepts (i.e., screening, social determinants of health, cultural awareness) that must be tailored to the recovery processes of communities. The literature, frameworks and themes also highlight that groups disproportionately impacted by the disaster (i.e., older adults, children) should be supported through tailored interventions.

- Multiple sectors will have a role in the COVID-19 pandemic recovery process, including public health. Strengths of the public health system that may be leveraged to support population recovery include the ability to conduct population health assessments, the ability to use or inform population health interventions (e.g., through public health policy), inter-sectoral partnership, and the capacity to embed a health equity lens into disaster recovery efforts.

- Future work related to disaster recovery should explore the literature to examine recovery frameworks that have been evaluated to determine their impacts or effectiveness, and to identify specific interventions for building resilience as well as their effectiveness.

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Appendix A – Information Extracted from Disaster Recovery Frameworks

Table 1. Overview of identified frameworks

Lead Author (Year)	Framework	Population	Targeted Area	Disaster-Specific (Yes/No)	Themes
Drury (2019)[18]	12 Recommendations Based on the Social Identity Approach	General or Unspecified	Community	No	Acknowledgement/Validation, Active Communication, Community Centred, Cultural Awareness, Longitudinal, Social Resources
Gibson (2018)[14]	3-Stepped Model of Care	Geriatric	Mental Health	No	Individualized Needs, Longitudinal, Risk Stratification (Screening)
Gil-Rivas (2016)[19]	Ecological Framework	General or Unspecified	Community	No	Active Communication, Community Centred, Cultural Awareness, Longitudinal, Multi-Level Recovery, Recognize Social Determinants of Health, Social Resources
Houston (2014)[15]	Social Media Use	General or Unspecified	Community, Mental Health	No	Acknowledgement/Validation, Active Communication, Community Centred, Social Resources
Kato (2012)[16]	Inter-Agency Standing Committee (IASC) Recommendation	General or Unspecified	Mental Health	No	Active Communication, Community Centred, Cultural Awareness, Individualized Needs, Longitudinal, Risk Stratification (Screening)
Lai (2016)[12]	Pillar II & proposed IV to the United Nations Comprehensive School Safety Framework	Pediatric	Mental Health	No	Individualized Needs, Longitudinal, Risk Stratification (Screening), Social Resources

Lead Author (Year)	Framework	Population	Targeted Area	Disaster-Specific (Yes/No)	Themes
Landau (2008)[20]	Linking Human Systems - LINC Community Resilience Model	General or Unspecified	Community	No	Community Centred, Cultural Awareness, Longitudinal, Multi-Level Recovery, Recognize Social Determinants of Health, Social Resources
Mannakkara (2012)[22]	Building Back Better (Economy Focus)	General or Unspecified	Economy	No	Active Communication , Community Centred, Longitudinal, Multi-Level Recovery
Mansdorf (2008)[8]	Matrix of Intervention for Terror Related Trauma (3-Stepped Model of Care)	General or Unspecified	Mental Health	Yes – Terrorism	Individualized Needs, Longitudinal, Risk Stratification (Screening), Social Resources
McDermott (2014)[13]	4-Stepped Model of Care	Pediatric	Mental Health	No	Individualized Needs, Longitudinal, Risk Stratification (Screening)
Pfefferbaum (2012)[9]	Social Ecology	Pediatric	Mental Health	No	Cultural Awareness, Individualized Needs, Multi-Level Recovery, Recognize Social Determinants of Health, Risk Stratification (Screening), Social Resources
Walsh (2007)[21]	Adaptation to Loss	General or Unspecified	Community	No	Acknowledgement/Validation, Cultural Awareness Social Capital/Supports
Walsh (2007)[21]	Framework for Family Resilience Adapted to Communities	General or Unspecified	Community	No	Acknowledgement/Validation, Active Communication, Community Centred, Cultural Awareness, Multi-Level Recovery, Social Resources

Lead Author (Year)	Framework	Population	Targeted Area	Disaster-Specific (Yes/No)	Themes
Walsh (2007)[21]	Landau & Saul Framework	General or Unspecified	Community	No	Acknowledgement/Validation, Community Centred, Cultural Awareness, Multi-Level Recovery, Social Resources
Williams (2007)[10]	4-Stepped Model of Care	Pediatric	Mental Health	No	Cultural Awareness, Individualized Needs, Longitudinal, Risk Stratification (Screening)
Williams (2008)[11]	Principles of Good Practice that Influence Service Design	Pediatric	Mental Health	No	Active Communication, Community Centred, Cultural Awareness, Individualized Needs, Longitudinal, Multi-Level Recovery, Recognize Social Determinants of Health, Risk Stratification (Screening), Social Resources
Williams (2020)[17]	7-Stepped Model of Community Care	General or Unspecified	Mental Health	No	Community Centred, Individualized Needs, Longitudinal, Multi-Level Recovery, Risk Stratification (Screening), Social Resources
Williams (2020)[17]	Royal College of Psychiatrists Occasional Paper 94	General or Unspecified	Mental Health	No	Community Centred , Cultural Awareness, Risk Stratification (Screening), Longitudinal, Social Resources
Yamashita (2015)[7]	International Commission on Radiological Protection (ICRP) Recommendations	General or Unspecified	Community, Mental Health	Yes – Nuclear	Active Communication, Community Centered, Multi-Level Recovery

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