

Influencing Health Equity Throughout the Emergency Management Cycle: A Scoping Review

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Master of Science degree in Nursing.

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Preface

Contributions of the MScN student (Katrina Coderre), thesis supervisor, and thesis advisory committee are summarized in the table below.

Name	Contributions
Katrina Coderre, MScN Student	• Authored study protocol and results of scoping review. • Completed title and abstract screening, full-text screening, data extraction and analysis.
Denise Hébert, RN, MSc, Thesis Advisory Committee Member	• Participated in Thesis Advisory Committee meetings. • Provided feedback on protocol. • Completed title and abstract screening. • Provided critical review and feedback on the final thesis document.
Dr. Chantal Backman RN, MHA, PhD, Associate Professor, University of Ottawa, School of Nursing, Faculty of Health Sciences, Thesis Advisory Committee Member, Thesis Evaluator	• Participated in Thesis Advisory Committee meetings. • Provided feedback on protocol. • Provided critical review and feedback on the final thesis document.
Dr. J. Craig Phillips, PhD, LLM, RN, ACRN, FAAN, FCAN, Full Professor, University of Ottawa, School of Nursing, Faculty of Health Sciences, Thesis Supervisor	• Bi-weekly thesis advisory meetings • Participated in Thesis Advisory Committee meetings. • Provided feedback on protocol and supported submission for publication. • Completed title and abstract screening, full-text screening, and data extraction. • Provided support throughout thesis development process.

Key Words

Health Equity, Emergency Management, Public Health, Priority Populations, Health Disparity, Disaster, Crisis

Abstract / Structured Summary

This thesis sought to gain a better global understanding of how public health can influence health equity throughout the emergency management cycle that includes prevention, mitigation, preparedness, response, and recovery through a scoping review. Seven articles met inclusion criteria, all focused on prevention, which aligns well with public health practices. Interventions such as accommodations for functional needs such as low vision, reduced hearing, limited proficiency in the language which services are provided, or use of assistive devices for mobility and providing training and education to priority populations may influence health equity; however, the evidence is limited, and further research is needed. Due to the intricate challenges that emergencies present and the many factors influencing health equity, there is a need to unravel complexities to guide comprehensive research and intervention design.

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Glossary of Key Terms

Determinants of Health: “Factors beyond an individual’s biology and behaviours - those that form the conditions in which people are born, grow up, live, and work...(Ontario Ministry of Health, 2021, pp. 20–21)”

Disaster: “A serious disruption to an affected area, involving widespread human, property, environmental and / or economic impacts, that exceed the ability of one or more affected communities to cope using their own resources (Emergency Management Ontario, 2022).”

Emergency: “A situation or an impending situation that constitutes a danger of major proportions that could result in serious harm to persons or substantial damage to property and that is caused by the forces of nature, a disease or other health risk, an accident or an act whether intentional or otherwise (Emergency Management Ontario, 2022).”

Emergency Management: “organized activities to prevent, mitigate, prepare for, respond to, and recover from actual or potential emergencies (Emergency Management Ontario, 2022).”

Health Disparities: “...indicators of a relative disproportionate burden of disease on a particular population (Adelson, 2005, p. 45).”

Health Equity: “having personal agency and fair access to resources and opportunities needed to achieve the best possible physical, emotional, and social well-being (Peterson et al., 2021, p. 742).”

Health Inequities: “...the underlying causes of the disparities, many if not most of which sit largely outside of the typically constituted domain of ‘health’ (Adelson, 2005, p. 45).”

Mitigation: “Actions taken to reduce the adverse impacts of an emergency or disaster. Such actions may include diversion or containment measures to lessen the impacts of a flood or a spill (Emergency Management Ontario, 2022).”

Preparedness: “Actions taken prior to an emergency or disaster to ensure an effective response. These actions include the formulation of emergency response plans, business continuity/continuity of operations plans, training, exercises, and public awareness and education (Emergency Management Ontario, 2022).”

Prevention: “Actions taken to stop an emergency or disaster from occurring. Such actions may include legislative controls, zoning restrictions, improved operating standards/procedures or critical infrastructure management (Emergency Management Ontario, 2022).”

Priority Populations: “...[people who] are experiencing and/or at increased risk of poor health outcomes due to the burden of disease and/or factors for disease; the determinants of health, including the social determinants of health; and/or the intersection between them. They are identified by using local, provincial, and/or federal data sources; emerging trends

and local context; community assessments; surveillance; and epidemiological and other research studies (Ontario Ministry of Health and Long-Term Care, 2018, p. 13).”

Preparedness: “Actions taken prior to an emergency or disaster to ensure an effective response. These actions include the formulation of emergency response plans, business continuity/continuity of operations plans, training, exercises, and public awareness and education (Emergency Management Ontario, 2022).”

Recovery: “The process of restoring a stricken community to a pre-disaster level of functioning. This may include the provision of financial assistance, repairing buildings and/or restoration of the environment (Emergency Management Ontario, 2022).”

Response: “The provision of emergency services and public assistance or intervention during or immediately after an incident in order to protect people, property, the environment, the economy and/or services. This may include the provision of resources such as personnel, services and/or equipment (Emergency Management Ontario, 2022).”

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Chapter 1: Introduction and Background

Emergencies, regardless of their nature (extreme weather events, infectious disease epidemics and pandemics, transportation accidents, chemical spills, etc.), have the potential to cause widespread illness, injury, death (Shin & Ji, 2021; World Health Organization, 2021), and to strain healthcare systems (Davis et al., 2010; Shin & Ji, 2021). When emergencies happen, populations already experiencing health inequities carry a disproportionate burden of adverse impacts (Davis et al., 2010; Jesus et al., 2021; Lindsay et al., 2022).

As the practice of public health aims to achieve equitable health outcomes across the lifespan through reducing preventable illness, injury, and premature death at the population level (Ontario Ministry of Health, 2021), the management of emergencies is foundational to public health. Throughout my nursing career working in public health emergency management, it has been challenging to design and implement interventions to influence health equity due to an apparent paucity of evidence. A need for evidence informed guidance for public health units led to the main objective of this thesis, which was to gain a better global understanding of what the existing empirical literature says about how public health units can influence health equity throughout the emergency management cycle, which includes prevention, mitigation, preparedness, response, and recovery. Key concepts as they relate to public health, health equity, and emergency management are outlined in the background section below.

Background

Rooted in health equity, social justice, and social determinants of health (Canadian Public Health Association, 2017), public health practice reduces preventable illness, injury, and premature death through five core functions, which include assessment and surveillance, health promotion and policy development, health protection, disease prevention, and emergency management (Ontario Ministry of Health, 2021). Health equity, social justice, and social

determinants of health are briefly described in this section. A description of the five core functions of public health is also described below. The foundational nature of emergency management in relation to public health practice is clear upon examination of the other core functions reinforcing that all five core functions are necessary for a well-functioning public health system.

Key Concepts

Health Equity

Health equity was recognised as a global priority in 1978 when countries from around the world signed the Declaration of Alma Ata, committing to investing their resources into achieving “health for all” by the year 2000 (World Health Organization, 1978). Over twenty years past the original target, “health for all” has not yet been achieved (Alberti et al., 2020; World Health Organization, 2018). Health equity is defined in a few different ways; for instance, according to the World Health Organization (2023a), “Health equity is achieved when everyone can attain their full potential for health and well-being.” Peterson et al. (2021, p. 1) define health equity as “having personal agency and fair access to resources and opportunities needed to achieve the best possible physical, emotional, and social well-being.” Finally, the Ontario Ministry of Health and Long-Term Care (2018b, p. 5) states “Health equity means that all people can reach their full health potential without disadvantage due to social position or other socially determined circumstance, such as ability, age, culture, ethnicity, family status, gender, language, race, religion, sex, social class, or socioeconomic status.” A common thread among these definitions is the ability for all people to achieve their best possible health without disadvantage based on various determinants of health, which are further defined and described below. For the purpose of this thesis, health equity is defined as the ability for all individuals to achieve their best

physical, mental, emotional, and social well-being despite the presence of factors negatively influencing determinants of health.

Social Justice

Social justice is commonly cited as core to nursing practice; however, has been challenging to define within the context of nursing (Buettner-Schmidt & Lobo, 2012; Matwick & Woodgate, 2017; Nemetchek, 2019). Buettner-Schmidt and Lobo (2012, p. 954) define social justice as “...full participation in society and the balancing of benefits and burdens by all citizens, resulting in equitable living and a just ordering of society.” Matwick and Woodgate (2017, p. 182) define social justice as “...a state of health equity characterized by both the equitable distribution of services affecting health and helping relationships.” For this thesis, social justice is defined as the means by which health equity is achieved through addressing social determinants of health. Within the practice of public health emergency management, social justice driven strategies may include working with priority populations to develop the knowledge and skillsets necessary to prepare for, respond to, and recover from emergencies (Eisenman et al., 2014; Glik et al., 2014; Hung et al., 2021; Matuso & Hirano, 2021; Tannous et al., 2017).

Social Determinants of Health

Social determinants of health are described as social and economic factors which relate to an individual's place in society. Some examples of social determinants of health include but are not limited to income and social status, employment and working conditions, education and literacy, childhood experiences, physical environments, social supports and coping skills, healthy behaviors, access to health services, biology and genetics, gender, culture, and race / racism (Government of Canada, 2023). Peterson et al. (2021) categorize social determinants of health

into four spheres of influence including, relationships and networks, systems of power, physiological pathways, and individual factors, which will be explained further in Chapter 2.

Population Health

The population health approach addresses root causes of inequities to positively influence social determinants of health, aiming to create the conditions necessary for all people to achieve their optimal state of well-being without barriers (Government of Canada, 2012; Ontario Ministry of Health and Long-Term Care, 2018b; Peterson et al., 2021). This approach aims to improve the health of an entire population or sub-population, reducing health inequities by focusing on populations instead of individuals (Government of Canada, 2012). An example of a population-level approach is management of flood plains to prevent flooding and consequently any adverse health impacts and inequities which may result from flooding (Keim, 2018).

Core Functions of Public Health

Public health units in Ontario aim to promote and protect the physical and mental health, well-being, resilience, and social connectedness of their respective communities (Ontario Ministry of Health, 2021). These goals are met through core public health functions consisting of assessment and surveillance, health promotion and policy development, health protection, disease prevention, and emergency management, which are described below (Ontario Ministry of Health, 2021).

Assessment and Surveillance

Public health organizations continuously monitor, collect, and analyze data to plan, implement, and evaluate public health practice (Canadian Public Health Association, 2017). For instance, impending public health emergencies can be detected early when monitoring epidemiological trends. An early warning can give public health organizations and health system

partners time to mitigate potential impacts as well as prepare for and respond to hazards, which are phenomena, substances, activities, or conditions which are natural, human-caused, or technological in nature and may lead to adverse health impacts such as loss of life, injury, other health impacts, or social, economic, financial, or environmental damage (Canadian Public Health Association, 2017; Ontario Ministry of Health, 2021; Ontario Ministry of Health and Long-Term Care, 2018a)

Health Promotion

Health promotion aims for individuals and communities to take charge of their own health by promoting healthy behaviours through interventions such as providing education and training regarding emergency preparedness to individuals and communities (Canadian Public Health Association, 2017). Health promotion occurs at several levels including individual, family, community, sector / system, and society. Strategies to promote health and address social determinants of health include strengthening community action, building healthy public policy, creating supportive environments, developing personal skills, and re-orienting health services (Public Health Agency of Canada, 2001; World Health Organization, 2023b). For example, following an emergency, engaging members of an impacted community to enhance their capacity and resilience for future emergencies is a way of strengthening community action (Hope Corbin et al., 2021). Addressing social determinants of health in policies across sectors can promote health equity (Kennedy et al., 2019). An example of creating supportive environments could be working with faith-based organizations to serve as places where impacted people can meet to gather important information, resources, and to support each other during emergencies (Murray & Poland, 2020). Personal skills can be developed in workshops offered to priority populations to increase emergency preparedness knowledge and capacity (Eisenman et al.,

2014). Finally, an example of re-orienting health services is providing vaccination clinics in communities experiencing barriers to accessing healthcare (Oza et al., 2023).

Policy Development

Policy development provides direction for implementation of interventions and decision-making. For example, policies to facilitate the reduction in the spread of COVID-19, in response to the pandemic (Canadian Public Health Association, 2017). Furthermore, future health inequities can be prevented by implementing policies which consider the unique needs of priority populations to guide decision-making before, during, and after emergencies (Jesus et al., 2021).

Health Protection

Health protection serves to address factors which negatively influence health and disease prevention attempts to reduce the burden of various diseases (Canadian Public Health Association, 2017), in the context of emergency management, surveillance of infectious diseases followed by prompt case and contact management in response to the occurrence of a disease of public health concern such as COVID-19 (Oza et al., 2023).

Disease Prevention

Disease prevention aims to reduce the burden of chronic and infectious diseases on the population as a whole and the health care system as well as to improve well-being (Ontario Ministry of Health, 2021). Keim (2018) describes four levels of prevention: primordial, primary, secondary, and tertiary. Primordial prevention seeks to eliminate the occurrence of a hazard all together (Keim, 2018), population-level routine immunization programs would be one example (Bochenek et al., 2015). Primary prevention's goal is to reduce exposure to an existing hazard (Keim, 2018) such interventions could include public communication through multiple outlets, using multiple languages and accessibility accommodations to ensure as many people have

access to information on how to prevent or reduce their exposure to an infectious disease (Hope Corbin et al., 2021). The aim of secondary prevention is to stop disease from occurring after exposure (Keim, 2018); for instance, ensuring equitable access to health and vaccination services during a pandemic (Tan et al., 2023). Finally, tertiary prevention seeks to impede the progression of disease to impairment, disability, or death (Keim, 2018) such as ensuring equitable access to early treatment of disease to priority populations (Hope Corbin et al., 2021).

Emergency Management

Like public health, the practice of emergency management strives to ensure the safety, security, and resilience at various levels, including individuals, municipalities, provinces and territories, countries, and beyond (Emergency Management Ontario, 2023). The emergency management cycle consists of organized activities to address the impacts of emergencies through five phases: prevention, mitigation, preparedness, response, and recovery (Emergency Management Ontario, 2022). Some emergencies can be prevented through addressing underlying causes; for instance, some infectious disease related emergencies can be prevented through routine immunization programs (Bochenek et al., 2015). When an emergency cannot be prevented, mitigation is the next phase and reduces impacts of impending hazards; for example, mass vaccination clinics during a pandemic can reduce the overall impact of an infectious disease on the population (Bochenek et al., 2015). Preparedness involved activities such as emergency planning, training, and exercises (Bochenek et al., 2015). Response activities address impacts of the emergency and can include enhanced surveillance to inform interventions (Bochenek et al., 2015). Finally, the phase of recovery aims to “build back stronger” and may involve some assessment and evaluation of response activities to inform resilience-promoting

activities (Bochenek et al., 2015). The emergency management cycle within the context of public health practice is discussed further in Chapter 2.

Thesis Statement and Outline

The practices of public health and emergencies both endeavour to build resilience within individuals, families, communities, and beyond. It is through community-level approaches that this can most effectively be achieved (Castleden et al., 2011). The upstream nature of some emergency management phases and its multi-level approach can promote health equity and fits well within public health practice (Peterson et al., 2021). As emergencies can impact health equity, there is a need for public health practitioners to address social determinants of health through emergency management. This thesis seeks to gain a global understanding of what public health units can do to positively influence health equity throughout the emergency management cycle.

A scoping review was conducted. The rationale for using this research methodology and a detailed overview of the guiding frameworks are provided in Chapter 2. Chapter 3 contains the scoping review protocol, which was submitted for publication to the Journal of Primary Care and Community Health and is currently being revised for resubmission, based on peer review and editor feedback. Chapter 4 is a summary of results, reported according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Scoping Review Extension (PRISMA – ScR). The articles in Chapters 3 and 4 used the American Medical Association formatting as required by the Journal of Primary Care and Community Health. Chapter 5 is an integrated discussion, which aims to synthesize research results, other relevant literature, discussion points, and application of findings to the field of public health emergency management and nursing.

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Chapter 2: Methodology and Frameworks

Methodology

Throughout my career in public health emergency management, a common question has been “what can we do?” when attempting to incorporate health equity into our work. To clarify, the “what” refers to interventions to influence health equity which are supported by peer reviewed literature. My initial intent was to answer the aforementioned question through reviewing and evaluating the existing evidence, which aligns well with the goals of synthesis research (Peters et al., 2015a). To refine the research question, I worked through different models developed to help articulate researchable questions, such as Population, Intervention, Comparison, Outcome (PICO) and Sample, Phenomenon of Interest, Design, Evaluation, Research Type (SPIDER) (Cooke et al., 2012), both of which seemed too rigid for the exploratory intent behind my inquiry. Arksey and O’Malley’s (2007) Population, Concepts, Context (PCC) model was more conducive to identifying the research objective, which was to gain a global understanding of how public health units can influence health equity throughout the emergency management cycle. A need to map out existing peer-reviewed literature supporting public health interventions influencing health equity in the context of emergency management aligns well with scoping review methodology (Arksey & O’Malley, 2007; Peters et al., 2015a); furthermore, the scarcity of relevant studies found during preliminary searches meant that a systematic review was not likely to be feasible (Peters et al., 2015a). Click or tap here to enter text. The Arksey and O’Malley (2007) scoping review methodology was used to guide this research, involving five steps: (1) identify the research question, (2) identify relevant studies, (3) select studies, (4) chart the data, and (5) collate, synthesize, and report results. An optional sixth

step, expert consultation was not completed due to the time and budgetary confines of a master's thesis.

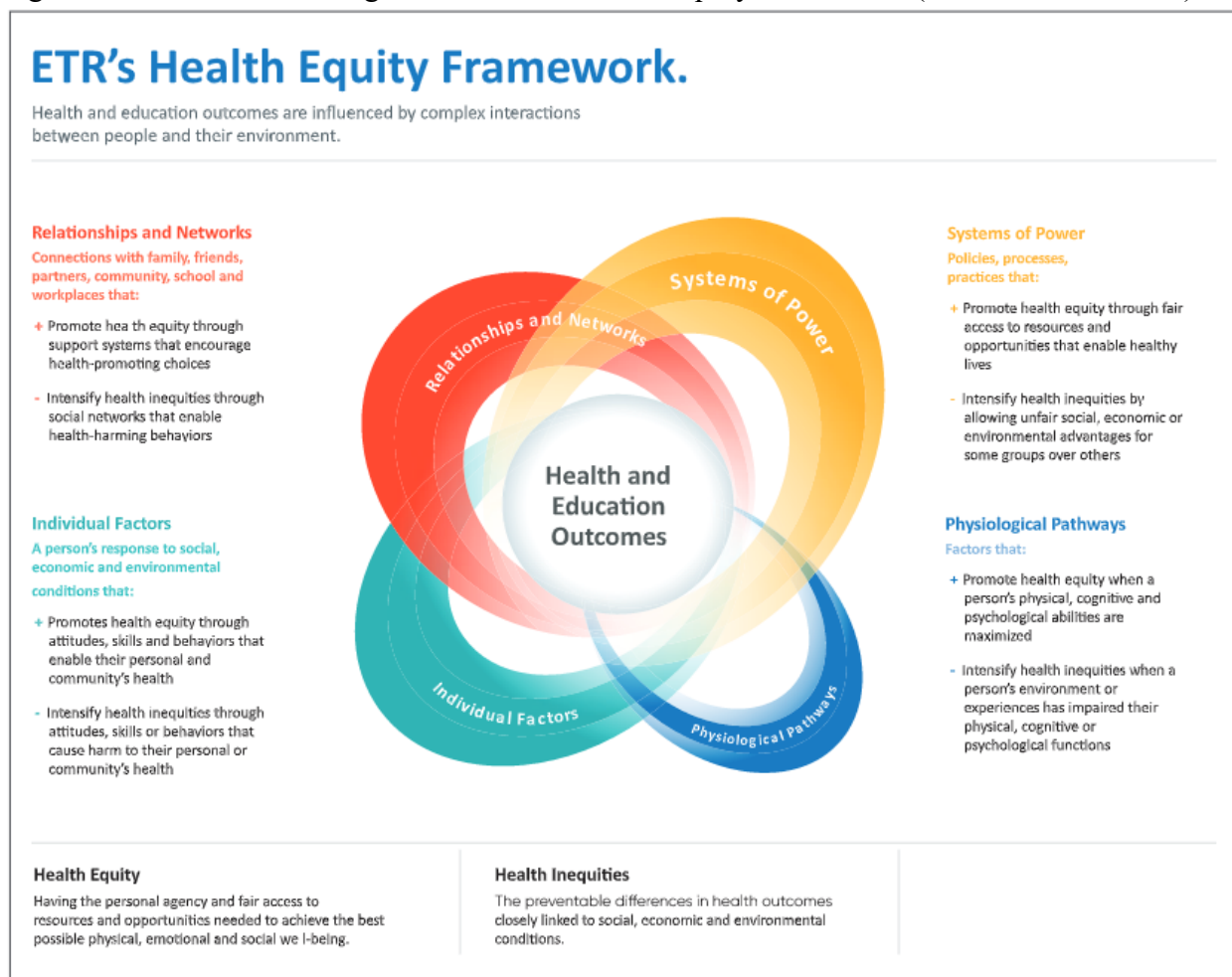
All study designs, whether quantitative, qualitative, or mixed methods were included to promote a holistic understanding of the interventions used. The need for an adaptive process, along with anticipated scarcity of eligible literature informed the decision to complete a scoping review rather than a systematic review and meta-analysis. Furthermore, the diverse range of research methods used in eligible studies would present challenges to statistical interpretation and meta-analysis. The frameworks that guided this research are summarized below.

Health Equity Framework

The Health Equity Framework was chosen to guide the research team's understanding of determinants of health as it was created specifically to facilitate translation of science to practice and promote the development of practice-informed research questions, which aligns with the research purpose and question (Peterson et al., 2021).

The Health Equity Framework is represented visually by four intersecting spheres of influence, representing determinants of health, meeting in the middle which is labelled "health and education outcomes" (see Figure 1). The spheres of influence include relationships and networks, systems of power, physiological pathways, and individual factors, all of which can impact health and education outcomes (Peterson et al., 2021).

Figure 1: Education, Training, and Research Health Equity Framework (Peterson et al., 2021)



Relationships and Networks

Relationships and networks are connections comprised of family, friends, people within cultural communities, neighbourhoods, schools, and workplaces who can influence health behaviours and serve as support systems (Peterson et al., 2021). For example, relationships and family are important factors influencing resilience (Lindsay et al., 2022).

Systems of Power

Systems of power are the policies, processes, and practices that influence access to resources and opportunities needed to achieve and maintain health. For instance, when policy and practice fail to consider the needs of people with disabilities, barriers to supports during

emergencies are experienced such as a lack of accessible transportation for evacuation during hurricanes (Lindsay et al., 2022). For example, during Hurricane Katrina, in 2005, individuals who were racialized, had low incomes, or were elderly were less likely to evacuate as they were less likely to have access to a vehicle (Zoraster, 2010).

Physiological Pathways

Physiological pathways are biological, physical, cognitive, and psychological abilities. Exposure to multiple emergencies can exacerbate pre-existing health conditions; for examples post traumatic stress can be exacerbated during emergencies and pregnant persons exposed to emergencies are at greater risk of experiencing pre-term delivery (Leppold et al., 2022).

Individual Factors

Finally, individual factors are the attitudes, behaviours, and skills of individuals, in response to the social, economic, and environmental conditions experienced. For instance, an individual's perception of risk related to an emergency, can influence their behaviours such as preparing for emergencies, or evacuating when recommended (Leppold et al., 2022). Similarly, awareness of emergency preparedness and its importance in relation to an infectious disease increases the likelihood of including supplies such as thermometers and masks as part of an emergency kit (Glauber et al., 2023).

The Population Health Promotion Model

The Population Health Promotion Model was developed from the following two documents: 1) Strategies for Population Health: Investing in the Health of Canadians (Health Canada, 1994), which identified determinants of health, and 2) the Ottawa Charter for Health Promotion (World Health Organization et al., 1986), which lists several comprehensive action strategies to address social determinants of health. The model seeks to guide population health

interventions through addressing three components: determinants of health, comprehensive action strategies, and levels of intervention, from individual to society.

Determinants of health, as described in chapter one, interact with one another to influence health outcomes (Peterson et al., 2021). Examples may include income and social status, employment and working conditions, education and literacy, childhood experiences, physical environments, social supports and coping skills, healthy behaviours, access to health services, biology and genetic endowment, gender, culture, race / racism (Government of Canada, 2023) as well as sexual orientation (Heidari et al., 2016). For example, physical environments such as crowded living conditions place people at a higher risk of contracting and transmitting respiratory illnesses (Nash et al., 2023)

Comprehensive action strategies seek to promote health at various levels (individual, family, community, sector / system, and society), including: (a) strengthening community action, which aims to empower groups to own and control their actions and outcomes, (b) building healthy public policy, which involves coordinated action across sectors to promote equity through health, income, and social policies, (c) creating supportive environments, which provide safe, stimulating, and enjoyable living conditions; developing personal skills, so that individuals have the knowledge and skills to take control over their own health, and (d) re-orienting health services to focus on the needs of individuals and communities as a whole (Public Health Agency of Canada, 2001; World Health Organization, 2023b).

Emergency Management Cycle

While the exact origins of the Emergency Management Cycle are unclear, concepts of the different phases are mentioned in the literature as early as the 1920s, notably in a study analysing societal response and changes following the collision of two ships in Halifax, Nova Scotia

(Coetzee & Van Niekerk, 2012). The evolution of the emergency management cycle has been influenced by several disciplines, including sociology, geography, psychology, civil defense, and public administration and development, and has shifted over the years from a linear process to one that is cyclical as emergencies became more frequent in the 1970s (Coetzee & Van Niekerk, 2012).

While some emergency management professionals use a cycle that has four phases (mitigation, preparedness, response, and recovery), in Ontario, the Emergency Management Cycle consists of five phases including prevention, mitigation, preparedness, response, and recovery and will be expanded upon below (Emergency Management Ontario, 2021a). This thesis will include five phases of emergency management as it reflects current practice in Ontario, and as prevention is a key component of public health emergency management (Bochenek et al., 2015).

Prevention

Prevention refers to “*actions taken to stop an emergency or disaster from occurring. Such actions may include legislative controls, zoning restrictions, improved operating standards/procedures or critical infrastructure management*” (Emergency Management Ontario, 2021a, p. 16). In the context of public health, prevention activities may include population level routine immunization campaigns and public education (Bochenek et al., 2015).

Mitigation

Emergency Management Ontario (2021a) describes mitigation as actions taken to reduce the impact of emergencies which can not be prevented. Complaints-based food and water inspection as well as mass immunization clinics in response to a pandemic are public health examples of mitigation strategies (Bochenek et al., 2015). Ensuring equitable access to vaccines

and health services and prioritizing populations with the highest degree of exposure to a hazard during emergencies is one example of how health equity can be influenced during this phase (Auerbach et al., 2023; Tan et al., 2023).

Preparedness

Preparedness activities ensure the ability to appropriately address the other components of the emergency management cycle, including prevention, mitigation, response, and recovery (Emergency Management Ontario, 2021a) and include emergency plans, training, and exercises (Bochenek et al., 2015). Engaging priority populations in preparedness activities facilitates consideration of unique needs and mitigation of the impacts of response (Cunningham-Erves et al., 2022; Jesus et al., 2021).

Response

Response activities occur immediately before, during, or after an emergency. They aim to manage impacts (Emergency Management Ontario, 2021a) and, within public health, include actions such as enhanced surveillance on the characteristics of emerging threats and interpreting environmental assessments. For example, following a chemical spill surveillance can inform guidance to the public regarding if or when residents in the impacted area can return home and any additional actions required (Bochenek et al., 2015). Also, using accessible communication strategies involving multiple outlets such as social media, radio, television, and printed materials along with accommodations such as sign language interpreters, and translation to multiple languages facilitates equitable accessibility to important updates during emergencies (Hope Corbin et al., 2021).

Recovery

The recovery phase of emergency management involves activities to restore functioning of a community to pre-emergency levels (Emergency Management Ontario, 2022). Recovery activities also attempt to “build back better” by addressing social determinants of health to improve conditions necessary for resilience in future emergencies (Jesus et al., 2021; Kennedy et al., 2019). While current practice is often reactive and focused on restoration, there is opportunity, following an emergency, to re-build with stronger infrastructure rather than simply restoring previous conditions (Kennedy et al., 2019). Public health units can advocate for health in all policies to build resilient, equitable and sustainable conditions into existing or new infrastructure (Kennedy et al., 2019).

Integration of the two frameworks

The Health Equity Framework can guide researchers and public health practitioners by demonstrating how various determinants can interact with each other and influence health outcomes before, during, and after emergencies (Peterson et al., 2021), while the Emergency Management Cycle can promote understanding of the course of emergencies and guide appropriate activities through providing an understanding of each phase and corresponding goals (Emergency Management Ontario, 2021b). Combining the Health Equity Framework with the Emergency Management Framework while considering the key concepts described in Chapter 1 can facilitate insight into how determinants of health are impacted during different phases of emergency management and how public health practitioners can influence health equity during each phase of the Emergency Management Cycle.

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Chapter 3: Research Methods

Influencing Health Equity Throughout the Emergency Management Cycle: A Scoping Review Protocol

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Key Words

Health Equity, Emergency Management, Public Health, Priority Populations, Health Disparity, Disaster, Crisis

1 INTRODUCTION AND BACKGROUND

In 1978, the Declaration of Alma Ata recognised health as a human right and aimed to achieve health for all by the year 2000 ^{1,2}. While the importance of health for all is still recognised, it has not yet been achieved - over twenty years past the original target date ³. Health inequities persist ⁴, often rooted in colonialism, racism, and social exclusion which form a foundation for determinants of health such as poverty, inadequate housing conditions, and food insecurity - placing affected individuals at greater risk for adverse health outcomes ⁵. Education Training and Research (ETR) Health Equity Framework will guide this scoping review. The ETR Health Equity Framework describes four intersecting spheres that influence health and educational outcomes throughout the lifespan: (1) Systems of Power, (2) Relationships and Networks, (3) Individual Factors, and (4) Physiological Pathways ⁶. Systems of power refer to policies, processes, and practices influencing access to the resources and opportunities needed to achieve and maintain health. Relationships and networks are connections comprised of family, friends, people within cultural communities, neighbourhoods, schools, and workplaces who can influence health behaviours and serve as support systems. Individual factors are a person's attitudes, behaviours, and skills in response to the social, economic, and environmental conditions they have experienced. Finally, physiological pathways refer to biological, physical, cognitive, and psychological abilities ⁶.

Emergencies can precipitate or exacerbate health inequities through causing disruptions to healthcare and social support access ⁷⁻⁹, and leading to widespread illness, injury, and death from exposure to extreme weather events, extreme heat, poor air quality, impacts on food and water safety, and food insecurity ⁹. Individuals already experiencing inequities such as low

income, chronic illness, disability, inadequate housing, and racial discrimination are more likely to carry a disproportionate burden of adverse health impacts caused by emergencies ^{4,10–12}.

The individual and community level effects of these disparities in emergencies have been magnified by the COVID-19 pandemic. In reference to the COVID-19 pandemic, author Damian Barr tweeted, “We are not all in the same boat. We are all in the same storm. Some are on super-yachts. Some have just the one oar ¹³.” For instance, during the pandemic, poverty has been strongly associated with risk of COVID-19 infection, in addition to adverse outcomes ¹⁴. Throughout the COVID-19 pandemic, public health measures meant to protect the population, such as stay at home orders and physical distancing, left some populations at greater risk of infection, gaps in healthcare, domestic violence, and lost income ^{12,15,16}.

Beyond pandemics, other emergencies such as forest fires or extreme weather events also inflict the greatest burden on people with the fewest resources ⁷. Emergencies can cause new health inequities or worsen existing ones due to factors influencing health outcomes, also known as determinants of health ⁷.

Spheres of influence can also impact the ability to prepare for, respond to and recover from emergencies. For example, during an emergency, people who have families in adjacent cities are more likely to evacuate their areas when needed. Furthermore, displacement is likely to affect mental health when there is a disruption of social support systems. Finally, people with lower income, minorities, and other underserved populations may experience more challenges recovering from trauma related to emergencies – maintenance of financial and social support systems may reduce adverse mental health outcomes ¹⁷. Even when supports are in place to assist people in evacuation from an area, some vulnerable populations are overlooked. For instance,

during hurricanes Katrina and Rita, some evacuation buses did not have wheelchair lifts and were inaccessible to any individuals with limited mobility or disabilities ¹⁷.

When the impacts of disparities on health outcomes are acknowledged, health equity is distinguished as a priority for public health ^{6,18}. Afterall, public health aims to protect and promote health, while reducing inequities ¹⁹. Effective management of emergencies can reduce adverse impacts, and along with health equity, is foundational to the practice of public health ^{18,20}. The COVID-19 pandemic has highlighted how inequities can contribute to some populations carrying a disproportionate burden of health impacts from an emergency ¹². With inequities brought to the forefront, now is a time for change ^{12,21}. While there is ample acknowledgement of a need to apply a health equity lens when preparing for, responding to, and recovering from emergencies ^{12,22,23}. Empirical literature supporting strategies for integrating health equity into emergency management appears to be sparse. Further guidance is needed for public health practitioners to develop evidence informed interventions that influence health equity during all phases of emergency management.

The authors seek to explore the available evidence, aiming to gain a better understanding of how public health units could influence health equity throughout the emergency management cycle through : (1) examining the state of research activity regarding the integration of health equity into emergency management, (2) assessing the need for and feasibility of a more focused systematic review, (3) synthesizing and disseminating research findings, and (4) identifying gaps in the existing literature, which aligns with scoping review methodology ²⁴.

2 METHODS

The development of this scoping review protocol was guided by Arksey and O'Malley's framework ²⁵⁻²⁷ which involves the following stages: (1) Identify the Research Question, (2)

Identify Relevant Studies, (3) Select Studies, (4) Chart the Data, (5) Collate, Synthesize, and Report Results ²⁷. The optional 6th stage, a consultation exercise, will not be completed at this time, due to the confines of a master's thesis ²⁷. The complexity of the concept, health equity, and context, emergency management, studied fit appropriately with the broad nature of scoping review methodology ²⁵. While this protocol has been developed a priori, the iterative nature of scoping reviews allows for flexibility; the research question, search strategy, and eligibility criteria may be adapted as researchers develop a deeper understanding of concepts and contexts within the literature ²⁵. To maintain transparency, any post hoc changes to this protocol will be documented and reported with rationale in the final report ²⁵. Note that while key terminology is defined throughout this paper, Appendix A (see supplementary materials) contains a comprehensive glossary of terms.

2.1 Identify the research question

The research purpose and question were refined using the Population, Concepts and Context (PCC) framework ^{25,26}. The group to be studied is priority populations. We have used the Ontario Ministry of Health and Long-Term Care definition for priority populations, which are defined as people who are:

... experiencing and/or at increased risk of poor health outcomes due to the burden of disease and/or factors for disease; the determinants of health, including the social determinants of health; and/or the intersection between them. They are identified by using local, provincial, and/or federal data sources; emerging trends and local context; community assessments; surveillance; and epidemiological and other research studies. ²⁸

The concept of interest, health equity, is defined as “having personal agency and fair access to resources and opportunities needed to achieve the best possible physical, emotional,

and social wellbeing(being” (Peterson et al., 2021). Finally, the context to be explored is emergency management, which is defined as “organized activities to prevent, mitigate, prepare for, respond to, and recover from actual or potential emergencies”²⁹. In addition to the previously mentioned reasons, throughout this scoping review, the authors seek to gain a rich understanding of the relationships between health equity and emergency management, and how health impacts on priority populations are influenced. The research question guiding this scoping review is “What does existing literature say about how can public health units can influence health equity throughout the emergency management cycle that includes prevention, mitigation, preparedness, response, and recovery?” As this is a preliminary exploration and mapping of literature intersecting emergency management and health equity, the question was intentionally kept broad to minimize the likelihood of unintentionally excluding important literature relevant to the population, concept, and context of interest^{26,27}. However, as this approach may yield a large volume of literature²⁷, the authors are prepared to adapt the purpose and question to ensure the amount of literature selected for review is manageable within the time and budgetary constraints of this project.

2.2 Identify relevant studies

In this stage, sources of information, such as electronic databases, reference lists, hand searches of key journals, existing networks, relevant organizations, and conferences, are identified to guide the search^{26,27}. For this scoping review, the following electronic data bases will be used: MEDLINE, Embase, the Cochrane Library, Cumulative Index to Nursing and Allied Health Literature (CINAHL), PsychInfo, Scopus, Embase, Web of Science, and Google Scholar. MEDLINE and CINAHL were chosen as they are databases intended for healthcare professionals. PsychInfo was chosen to ensure that information related to the mental health

impacts of emergencies was not overlooked. Scopus, Embase and Web of Science were selected to ensure the inclusion of research from a diverse range of health and health related disciplines. Google scholar was included as an additional source to minimize the unintentional omission of key relevant literature. Prior to abstract and full text screening, search results will be uploaded into the reference management software, Zotero and the research synthesis software, Covidence. Keeping a record of dates, search strategies, results, and databases used can guide future searches based on adaptations made and when repeating searches closer to the date of publication to ensure the inclusion of any more recent literature that meets inclusion criteria ^{26,27}. Additionally, hand searches of key journals will be conducted to identify any relevant literature that may have been missed in electronic database searches, if applicable.

The search strategy was developed in consultation with a librarian from the Kingston, Frontenac and Lennox & Addington librarian, through the Public Health Ontario Shared Library Services Partnership, due to her superior skills in designing and executing sensitive search strategies ²⁷ as well as her expertise and familiarity with public health literature. As suggested by the consulting librarian, the search strategy combined terminology referring to priority populations and health equity. The initial search terms used to reflect priority populations and health equity included: health equity OR health inequity OR health parity OR health disparity OR priority populations OR vulnerable OR marginalized OR disadvantaged OR underprivileged OR underserved OR underserved. Search terms related to emergency management included: Emergency OR disaster OR crisis OR prevention OR mitigation OR preparedness OR response OR recovery. Following a preliminary rapid search completed by the consulting librarian, the search has been limited to literature published in 2012 or later as the initial search yielded over 46,000 results, which was not manageable given the limited time and budgetary resources. Prior

to initiating searches, this search strategy was reviewed by the consulting librarian and validated by other public health librarians using the Peer Review for Electronic Search Strategies (PRESS) checklist³⁰. The search strategy was expanded and adapted based on direction from the librarians and experts involved in the PRESS process (See Appendix B in supplementary materials).

2.3 Select studies

In this stage, eligibility criteria are identified to ensure that relevant studies are selected and to ensure transparency and consistency in decision-making during the screening process²⁷. Determining selection criteria ahead of time guides the reviewers by defining what is proposed and how decisions regarding inclusion and exclusion should be made²⁵. Preliminary inclusion criteria include: (1) Available in English language, (2) peer reviewed, empirical research, (3) outcomes related to health equity, (4) involve at least one component of emergency management (i.e. prevention, mitigation, preparedness, response, recovery), and (5) published in 2012, or later. Preliminary exclusion criteria include (1) Not available in English, (2) not peer reviewed or empirical research such as commentaries, editorials, letters to the editor, etc., (3) outcome not related to health equity, (4) not related to emergency management, and (5) published before 2012. While relevant thesis, dissertations, and other unpublished works will not be excluded during the title and abstract screening, they may be excluded during the full text screening.

Studies must be available in English due to the linguistic capacity and limited resources of the review team. The peer review process serves as a quality control mechanism for published literature, aiming to safeguard against false representation of research findings³¹ and reduces the risk of bias³². By including only articles that are peer reviewed, the authors intend to exclude literature which may be judged by some people to be less robust Literature must involve at least one component of emergency management and outcomes must relate to health equity to ensure

that eligible studies align with the research purpose and question. The authors chose to include all study designs, aiming to facilitate a deeper and more broad understanding of integration of health equity throughout the emergency management cycle ²⁵. While the authors acknowledge that narrowing search criteria may result in exclusion of key literature, they may need to do so post hoc to balance time and resource constraints with the demands of a more exhaustive scoping review ^{26,27}. All study designs are eligible because inclusion of various methodologies is consistent with the broad nature of scoping reviews, and strengths of different study designs can offset limitations of others when the literature is viewed as a collective body of works ²⁶.

To ensure consistency in study selection, the search results will be screened independently by four members of the scoping review team. Study selection will occur in two steps: (1) Screening of abstracts and titles, and (2) Screening of full text articles as it cannot be assumed that abstracts capture the full scope or contents of the articles ²⁷. Discrepancies in screening decisions shall be resolved through discussion among all members of the review team. To enhance transparency, the study selection process will be represented visually, using a Preferred Reporting Items for Systematic Reviews and Meta-Analysis flow chart ^{25,26}. Additionally, a list of literature excluded from the full text review, along with rationale for exclusion will be included in the form of a table for transparency and to bring readers' attention to other relevant literature that may be of interest to them ²⁷.

2.4 Chart the data

Data extraction from the included full text articles will be guided using a charting form in Microsoft Excel. Microsoft Excel was chosen over using a form in Covidence to enable easy adaptation of the form if required as the authors develop a deeper understanding of the literature ²⁵. The use of data charting forms facilitates collection of rich data, and promotes consistency

among reviewers ²⁴. Two reviewers will independently pilot the data extraction process by using the data charting form to extract data from a random sample of five to ten articles to ensure consistency between reviewers; furthermore, reviewers will meet following this process to assess whether or not their approach is consistent with the research question and purpose ^{24,33}.

Reviewers will make adaptations to the data extraction form as needed and repeat the process until they have determined that the approach to data extraction aligns with the research question and purpose, and data extracted are consistent between reviewers ³³.

Data extracted will include general information such as authors, year of publication, study location, intervention type and comparator (where applicable), duration of intervention, study populations, purpose and aims of study, methodology, outcome measures, and a summary of important outcomes as suggested by Arksey and O'Malley ²⁷. Additionally, data relevant to the research purpose and question, such as health inequities documented, determinants of health, type of emergency, emergency management phase or phases ²⁷. To ensure the application of a health equity lens, population characteristics for extraction were chosen using O'Neill et al.'s ³⁴ equity focused framework, which recommends collecting the following data: place of residence; race, ethnicity, culture and language; occupation; gender, (social construct), gender identity/expression, sex (biological characteristic), sexual orientation ³⁵ religion/philosophy; education; socioeconomic status; social capital ³⁶. Age of participants will also be documented because it is a social determinant of health. Characteristics pertaining to interventions used were selected using the Template for Intervention Description and Replication checklist, which includes: brief name of intervention; why; materials used; procedures; who provided; how; where; when and how much; tailoring; modifications; how well (planned); how well

(implemented)³⁷. If feasible, the researchers will reach out to study authors to retrieve missing data, otherwise, omissions will be noted on the extraction forms.

2.5 Collate, synthesize, and report results

This stage will be completed in three steps, as recommended by Westphaln et al.²⁶: (1) conduct quantitative descriptive analysis and qualitative thematic analysis, (2) report results within the context of the research question and purpose, and (3) interpret findings within the context of future research, practice, and policy²⁶. Numerical data will be entered into the statistical analysis software, Statistical Package for the Social Sciences (SPSS) and presented in the form of charts and tables²⁷. Additionally, if feasible, statistical analysis of numerical data shall be completed through SPSS to synthesize quantitative findings. Quantitative analysis for this review will be descriptive in nature; however, if sufficient data is available, a formal systematic review and meta-analysis may be undertaken as a future research project. Qualitative data will be organized using applied thematic analysis³⁸ guided by the ETR Health Equity Framework⁶. The final report will adhere to the Preferred Reporting Items for Systematic Reviews and Meta-Analysis Extension for Scoping Reviews checklist, which provides reporting guidance for scoping review-specific knowledge synthesis³⁹.

2.6 Consultation exercise

While some describe this phase as optional²⁷ others consider it essential^{26,33}. Completing this step enriches knowledge synthesis, as experts and stakeholders may share knowledge that is not accessible in academic research, such as information regarding trends, historical context, and real-world feasibility^{26,27}. Additionally, a consultative exercise may assist in the identification of unpublished works^{26,27}. While the authors recognise the benefits of this stage, due to limited resources and timelines, a formal consultation exercise will not be completed at the time of the

review; however, experts and stakeholders will be consulted prior to future research endeavors, intervention designs, and policy adaptations. Some limitations to this approach may be assuaged by the expertise and clinical backgrounds of the authors ²⁴. Author biographies, summarizing practice experience and expertise are available in Appendix C (see supplementary materials).

3.0 CONCLUSION

Findings from the scoping review may support nurses and other public health practitioners in the development of interventions intended to influence health equity throughout the emergency management cycle. Additionally, gaps identified may highlight where more evidence is needed and guide future research.

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Chapter 4: Results

Influencing Health Equity Throughout the Emergency Management Cycle: A Scoping Review

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This article will be submitted for publication to the Journal of Primary Care and Community Health, and has been formatted in the American Medical Association citation style, as required by the journal. Prior to submission, the authors intend to complete another search to ensure that more recent articles meeting inclusion criteria are included in the scoping review. Submission guidelines for the Journal of Primary Care and Community Health are linked below.

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Key Words

Health Equity, Emergency Management, Public Health, Priority Populations, Health Disparity, Disaster, Crisis

Abstract / Structured Summary

Emergencies can precipitate or exacerbate health inequities through causing disruptions to healthcare and social support access, and leading to widespread illness, injury, and death from exposure to extreme weather events, heat stress, poor air quality, impacts on food and water safety, and food insecurity. The authors seek to explore the available evidence, aiming to: (1) examine the state of research activity regarding the integration of health equity into emergency management, (2) assess the need for and feasibility of a more focused systematic review, (3) synthesize and disseminate research findings, and (4) identify gaps in the existing literature. The research question guiding this scoping review is “What does existing literature say about how can public health units can influence health equity throughout the emergency management cycle that includes prevention, mitigation, preparedness, response, and recovery?” After screening 4268 articles, six met inclusion criteria. While research findings implied that interventions such as functional accommodations in clinical settings as well as training and education regarding emergency preparedness may influence health equity, evidence is limited.

1 INTRODUCTION

Emergencies, regardless of their cause (forces of nature, disease, health threat, or other), can result in serious harm to people, including widespread illness, injury, and death, in addition to property damage and material loss ¹⁻³. Emergencies can exacerbate existing health inequities or create new ones through causing disruptions to health care and social support systems ³⁻⁵. People already experiencing inequities carry a disproportionate burden of adverse impacts caused by emergencies. For instance, structural racism has led to and continues to influence health inequities experienced by people of colour by causing conditions which lead to increased exposure to environmental hazards, which are defined as phenomena, substances, activities, or conditions which are natural, human-caused, technological in nature and may lead to adverse health impacts such as loss of life, injury, other health impacts, or social, economic, financial, or environmental damage ¹. Increased susceptibility to adverse impacts of emergencies is experienced by some populations due to a greater prevalence of chronic health conditions, reduced resilience to emergencies due to limited financial resources to prepare for emergencies, and reduced access to healthcare services ⁶. Throughout this paper, people who experience or are at increased risk for adverse health outcomes due to burden of disease, factors for disease, determinants of health, including social determinants of health, and or the intersection between them are referred to as priority populations Ontario Ministry of Health and Long-Term Care, 2018b). While health inequities are not a new phenomenon, their existence has been highlighted throughout the COVID-19 pandemic ⁸. For example, priority populations including racial and ethnic minorities, people with disabilities, people with lower incomes, and people with pre-existing health conditions, placing them at a greater risk for severe illness, have carried the burden of infection, hospitalization, and death related to COVID-19 ⁹.

To prevent, mitigate, prepare for, respond to, and recover from emergencies, the practice of emergency management aims to protect lives, property, public health and the environment in addition to maintaining economic stability, and ensuring continuation of critical services and infrastructure ¹⁰, which aligns well with public health's aim to achieve equitable health outcomes across the lifespan through reducing preventable illness, injury, and premature death at the population level ¹¹.

Health is a human right ¹² and public health agencies at all levels of government must be cognizant of existing disparities so that emergency management strategies can be adapted to reduce inequities experienced by priority populations through addressing social determinants of health such as reorienting health services to ensure accessibility before, during and after emergencies ¹³. The authors seek to explore the available evidence, aiming to: (1) examine the state of research activity regarding the integration of health equity into emergency management, (2) assess the need for and feasibility of a more focused systematic review, (3) synthesize and disseminate research findings, and (4) identify gaps in the existing literature.

2 METHODS

2.1 Protocol and Registration

The protocol for this study was developed using the Preferred Reporting Items for Systematic Reviews and Meta-analysis (PRISMA) Scoping Review Extension ¹⁴ and guided by scoping review methodology as described by Arksey and O'Malley ¹⁵ and expanded upon by Levac (et al. (2010) and Westphaln et al. ¹⁷. The scoping review process included the following stages: (1) Identify the research question, (2) Identify studies, (3) Select studies, (4) Chart the data, (5) Collate, synthesize, and report, and a sixth optional step, consultation exercise was not

completed due to time and budgetary constraints ¹⁵. The protocol was submitted to the Journal of Primary Care and Community Health and is currently under review.

2.1.1 Identify the research question

The research purpose and question were defined using the Population, Concept and Context (PCC) framework ^{17,18}. The population studied was priority populations, including but not limited to racial and ethnic minorities ^{19,20}, people with functional needs including low vision and hearing, limited English language proficiency, mobility needs, and developmental needs ^{21,22}, and older adults ^{23,24}. The concept of interest was health equity, which is defined as “having personal agency and fair access to resources and opportunities needed to achieve the best possible physical, emotional, and social well-being” ^{25(p741)}. The context to be explored was emergency management, which is defined as “organized activities to prevent, mitigate, prepare for, respond to, and recover from actual or potential emergencies” ¹. Identifying the population, concept, and context led the authors to develop the research question, “What does existing literature say about how can public health units can influence health equity throughout the emergency management cycle that includes prevention, mitigation, preparedness, response, and recovery?”

2.1.2 Identify relevant studies

The eligibility criteria consisted of articles that: (1) were available in English only, (2) were peer reviewed, empirical research studies, (3) had outcomes related to health equity, such as those addressing determinants of health, (4) had at least one component of emergency management (i.e. prevention, mitigation, preparedness, response, or recovery), and (5) were published in 2012 or later. The iterative nature of the scoping review methodology allows for some modifications to original protocols as authors develop a deeper understanding of the

subject matter and available literature ²⁶. Rationale for eligibility criteria is provided in table 1 below.

Table 1: Inclusion Criteria and Rationale

Inclusion Criteria	Rationale
Available in English	Linguistic capacity and limited resources of review team
Peer reviewed, empirical research	Quality control for published literature and reduced risk of bias
Outcomes related to health equity	Aligns with research purpose and question
At least one component of emergency management (prevention, mitigation, preparedness, response, recovery)	Aligns with research purpose and question
Published in 2012 or later	Initial search yielded over 46,000 results which was not manageable given the limited time and budgetary resources; furthermore, some language used in reference to priority populations in older studies is unacceptable by today's standards.

2.1.3 Select studies

The electronic search strategy was completed using the following databases: MEDLINE, Embase, the Cochrane Library, Cumulative Index of Nursing and Allied Health Literature (CINAHL), PsychInfo, Scopus, Web of Science, and Google Scholar.

The search was completed on April 6, 2022, by a librarian from the Public Health Ontario Shared Library Partnership. As recommended by the librarian, search terms related to health equity and priority populations were combined and included: health equity OR health inequity OR health parity OR health disparity, OR priority populations OR vulnerable OR marginalized OR disadvantaged OR underprivileged OR underserved OR underserved. Search terms related to emergency management included: emergency OR disaster OR crisis OR prevention OR mitigation OR preparedness OR response OR recovery. All search terms were expanded with Medical Subject Headings (MeSH) in MEDLINE and Emtree terms in Embase. A

comprehensive summary of the Peer Reviewed Search Strategy (PRESS) is available in supplementary materials (Appendix B).

Search results were uploaded to the systematic review software, Covidence for title and abstract screening as well as data extraction. Title and abstract screening were completed by three members of the research team (KC, DH, and JCP), while full text screening and data extraction were completed by KC and JCP. Conflicts were resolved through discussion and consensus.

2.1.4 Chart the data

A data extraction form was created by the authors and uploaded into Covidence for ease of use. Data extracted included general information such as authors, year of publication, study location, purpose and aims of study, methodology, and study populations as suggested by Arksey and O'Malley¹⁵. Characteristics of interventions were charted using the Template for Intervention Description and Replication checklist, which includes: brief name of intervention; why; materials used; procedures; who provided; how; where; when and how much; tailoring; modifications; how well (planned); how well (implemented)²⁷. Data relevant to the research question such as health inequities documented, determinants of health, and emergency management phases were also included. PROGRESS, an equity focused framework developed by O'Neill et al.²⁸, was used to ensure the application of a health equity lens when documenting population characteristics. The framework recommends collecting the following data: **P**lace of residence; **R**ace, ethnicity, culture and language; **O**ccupation; **G**ender (social construct), gender (identity / expression), **S**ex (biological characteristic), **R**eligion, **E**ducation; **S**ocioeconomic status; and **S**ocial capital. Sexual orientation was added as suggested by Heidari et al.²⁹, age of

participants was also documented as it is a social determinant of health. Study characteristics are charted in Table 3 and summaries of the articles and findings are charted in Table 4.

3 RESULTS

3.1 Collate, synthesize, and report

As illustrated in figure 1, after duplicates were removed, a total of 4,255 titles and abstracts were screened. Following title and abstract screening, a total of 109 full text articles were screened, where a total of 6 studies met our inclusion criteria. Reasons for exclusion of full-text articles include no intervention, ($n = 62$), commentary ($n = 13$), focus on providers ($n = 13$), not health equity specific ($n = 7$), wrong intervention ($n = 4$), wrong setting ($n = 2$), outcome not related to health equity intervention ($n = 1$). Articles included in a systematic review by Williams et al. ³⁰ were reviewed and one article written by Glik et al. ¹⁹ met inclusion criteria and was already included in our review. Since no additional studies from the systematic review by Williams et al. ³⁰, met inclusion criteria, it was excluded from this scoping review. Figure 1 presents a visual representation of this process. See Appendix D of this thesis document for a list of articles excluded from this review along with rationale.

3.1.1 Study characteristics

As described in Table 3, eligible studies were published in 2014 ($n = 3$) ^{19,21,22}, 2017 ($n = 1$) ²³, and 2021 ($n = 2$) ^{20,24}. Each study used a different methodology, including a randomized controlled trial ²¹, a cohort study ¹⁹, a qualitative study ²², a cross-sectional study ²³, a case report ²⁰, and a quasi-experimental study ²⁴. Studies were completed in the United States ($n = 3$) ^{19,21,22}, Australia ($n = 1$) ²³, China ($n = 1$) ²⁰, and Japan ($n = 1$) ²⁴.

3.1.2 Relevant findings

Table 4 summarizes the included studies and relevant findings. Populations studied include people with developmental disabilities ^{21,22}, people with functional needs ²², racial or ethnic minorities ^{19,20}, people with low income ¹⁹, and older adults ^{23,24}.

Spheres of influence addressed in the literature include individual factors ($n = 6$)¹⁹⁻²⁴, physiological pathways ($n = 4$) ²¹⁻²⁴, relationships and networks ($n = 2$) ^{23,24}, and systems of power ($n = 6$) ¹⁹⁻²⁴. Interventions studied include disaster preparedness education ($n = 5$) ^{19-21,23,24} and clinical accessibility accommodations ($n = 1$) ²². Outcomes measured included knowledge and awareness about disasters ($n = 3$) ^{20,21,24}, preparedness ($n = 3$) ^{21,23,24}, stages of decision making regarding creating a communication plan, and having disaster supplies ($n = 2$) ^{19,20}, and access to post exposure prophylaxis medication ($n = 1$) ²².

Figure 1. PRISMA Flow Diagram ¹⁴

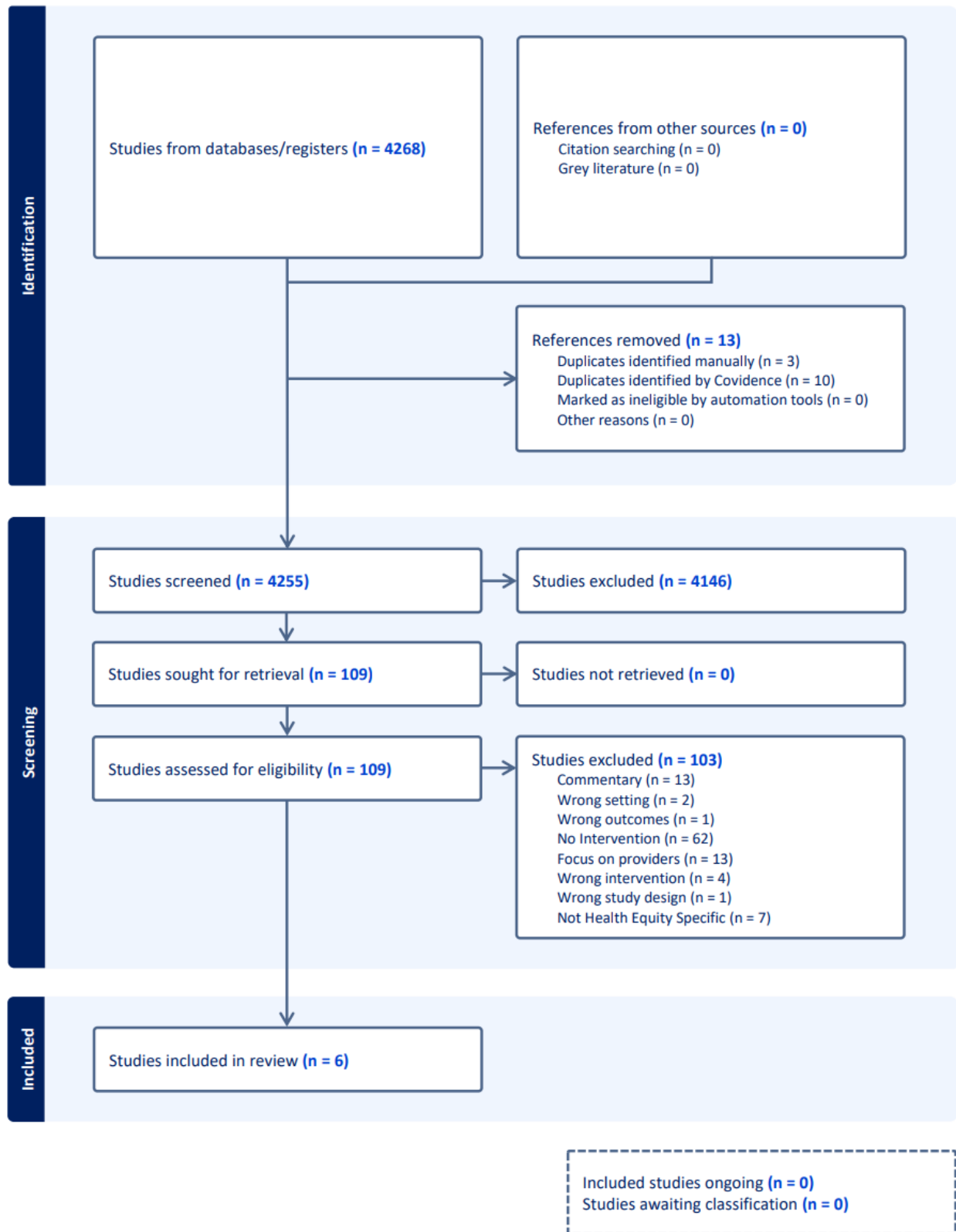


Table 3: Study Characteristics

Lead Author	Year	Title	Sample Size	Study Type	Country
Eisenman	2014	Peer-mentored preparedness (PM-Prep): a new disaster preparedness program for adults living independently in the community	91 (data reported for 82)	Randomized Controlled Trial	United States
Glik	2014	Using the Precaution Adoption Process model to describe a disaster preparedness intervention among low-income Latinos	242 (data reported for 187)	Cohort Study	United States
Zod	2014	A functional needs approach to emergency planning	40	Qualitative	United States
Tannous	2017	Association Between Home Visit Programs and Emergency Preparedness Among Elderly Vulnerable People in New South Wales, Australia	370	Cross-sectional Study	Australia
Hung	2021	CCOUC ethnic minority health project: A case study from health education initiatives to improve disaster preparedness in a rural Chinese population	In 2010 ($n = 110$) In 2011 ($n = 171$) In 2018 ($n = 71$)	Case Report	China
Matuso	2021	Effectiveness of disaster preparedness education in helping older people prevent isolation	Intervention ($n = 35$) Comparison ($n = 61$)	Quasi-experimental	Japan

Table 4: Summary of Studies and Findings

Lead Author	Eisenman	Glik	Zod	Tannous	Hung	Matuso
Intervention	Disaster Preparedness Education (Classroom)	Disaster Preparedness Education (Classroom for high-intensity cohort; culturally appropriate print materials through mail for low intensity cohort)	Clinical Accommodations	Disaster Preparedness Education (Home Visits)	Disaster Preparedness Education (Classroom) Emergency Supplies	Disaster Preparedness Education (Classroom)
Population Studied	People with developmental disabilities	Latinx people with low incomes	People with functional needs: low vision, low hearing, limited English proficiency, mobility, and developmental needs	Isolated older adults (aged 65+ years)	Dai and Yi ethnic minorities (China)	Older adults (aged 65+ years)
Sample Characteristics	Overall mean age of 40 years (20-68) Control mean age of 38.4 years (20-62) Experimental mean age of 41.5 (21-68) years	18 years and older (mean age 37 years) marital status reported, unclear of distribution throughout sample. low-income 55% women, 45% men	40 people with functional needs; 4 participants with low vision, 10 with low hearing, 8 with limited English proficiency, 11 with mobility needs, and 4 with developmental needs.	Mean age = 82.3 years, Standard deviation = 9 years "Living conditions" Private ($n = 191$, 95.5%); Public ($n = 9$, 4.5%)	Mean age = 44.5 years; range = 20-73 years. Categorized as <45; 45-59 years; > or = to 60 years Reported as income per person (RMB).	Age: Intervention = 78.91 ± 5.61 years; Comparison = 73.94 ± 5.21 years Intervention = 17 men, 18 women

Lead Author	Eisenman	Glik	Zod	Tannous	Hung	Matuso
	29.3% lived alone; remaining 76.1% lived with roommates, family, and "other". All had primary support. Female: Overall = 48 (58.5%); Control = 28 (70%); Experimental = 20 (47,6%) Hispanic / Latino x 7 White x 24 African American x 35 American Indian x 3 Asian / Pacific Islander x 8 Not specified x 5	English and Spanish speaking 64% were born in Mexico, and almost 30% of this group had been in the United States for less than 10 years (p. 277) Mexican, Guatemalan, El Salvadorian, Honduran		Male ($n = 49$, 24.5%); Female ($n = 151$, 75.5%) Language Spoken at home = English ($n = 360$, 97.3%); Others ($n = 10$, 2.7%). Aboriginal ($n = 5$, 1.4%); Others ($n = 98.7\%$)	In 2010 = not available. In 2011 = 4029. In 2018 = 18,026. Unclear whether income is annual Reported as male to female ratio. In 2010 ($n = 110$) = 1:1.6 In 2011 ($n = 171$) = 1:1.3 In 2018 ($n = 71$) = 1:1.4 Occupation: Agricultural (83% in 2010; 88% in 2011, 94.4% in 2018) local dialect, other than Mandarin speaking Dai and Yi ethnic minorities (China)	Comparison = 30 men, 31 women

Lead Author	Eisenman	Glik	Zod	Tannous	Hung	Matuso
Health Equity Framework	Systems of Power Individual Factors Physiological Pathways	Systems of Power Individual Factors	Systems of Power Individual Factors Physiological Pathways	Systems of Power Relationships and Networks Individual Factors Physiological Pathways	Systems of Power Individual Factors	Systems of Power Relationships and Networks Individual Factors Physiological Pathways
Outcome(s) Measured	Knowledge about disasters; Disaster preparedness (behavior) Pre-test and post-test questionnaire	Stages of decision making linked to having disaster supplies and creating a family communication plan Survey (pre and post intervention)	Participants' access to post-exposure medication	Association between home visit programs and emergency preparedness Survey (at registration, during visit, and post visit)	Believing the importance of disaster preparedness; knowing how to prepare a 'disaster kit'; intention to prepare a 'disaster kit'. Pre- (2010), post- (2011), and long-term (2018) post-intervention questionnaires	Emergency preparedness Survey (pre and post intervention)

Lead Author	Eisenman	Glik	Zod	Tannous	Hung	Matuso
Results	Significant difference only noted in experimental group who received primary support from ILS worker.	For changes regarding making a communication plan, significant effects only noted in high intensity group and in women, unmarried individuals, and individuals with higher perceived self-efficacy. Findings for changes in stages of decision making for disaster supplies are barely significant. The only significant predictor is perceived self-efficacy, with a marginal P-value. The overall model itself is not significant	100% of participants were dispensed PEP medication. Feedback from participants reflected communication issues (35.9%), staff training issues (29.3%), and overall exercise preparedness (34.8%).	Emergency Preparedness Home Visit Program resulted in increased resilience and level of awareness about emergency preparedness.	Interventions and outcomes not clearly described.	At one month post intervention, the experimental group had significantly higher awareness of and actions related to isolation preparedness than the comparison group

4 DISCUSSION

4.1 Summary of evidence

There is some research suggesting that interventions such as functional accommodations²² and emergency preparedness training and education^{19,21,23,24} can influence health equity; evidence is limited. All studies focused on the preparedness phase of the Emergency Management cycle, which fits well with public health practice which is rooted in prevention, mitigation, and preparedness³¹.

Five out of seven of the interventions were focused on education and training at the individual level^{19,21,23}. All interventions were able to positively influence health equity to some extent. A summary of how interventions influenced determinants of health is provided below using the Health Equity Framework, developed by Peterson et al.²⁵ to guide researchers and public health practitioners to promote health equity through their research and interventions by demonstrating how relationships and interactions between determinants of health can influence health equity outcomes. Determinants of health are represented by “spheres of influence”, including systems of power, relationships and networks, individual factors, and physiological pathways²⁵.

4.1.1 Systems of power

Interventions focusing on education about the importance of emergency preparedness and how to support priority populations, accessibility to the knowledge required to achieve successful outcomes related to emergencies was increased^{19–21,23,24,30}. Another example of influencing systems of power is demonstrated by Zod et al.²², who embedded accommodations into a post-exposure prophylaxis clinic, which increased accessibility to medications for people with various functional needs.

4.1.2 Relationships and networks

Emergency preparedness interventions focusing on isolation prevention ²⁴ and home visiting ²³ for older adults could promote relationships and networks.

4.1.3 Individual factors

Several interventions influenced individual knowledge ^{20,21}, attitudes ^{19,20}, and behaviours ^{19,21,23,24} related to emergency preparedness. Incorporating functional accommodations into a post-exposure prophylaxis clinic enabled individuals to access medications independently and with fewer barriers ²².

4.1.4 Physiological pathways

Some interventions targeted older adults, who can be at an increased risk of adverse health impacts related to emergencies due to their advanced age ^{23,24}, while others aimed to address functional needs such as low vision, use of assistive devices for mobility ²², and cognitive function ^{21,22}, enabling participants to achieve optimal outcomes. In the post exposure prophylaxis clinic exercise evaluated by Zod et al. ²², all participants were able to access post exposure prophylaxis medication; however, qualitative feedback from participants identified issues with communication, staff training, and overall exercise preparedness.

4.2 Practice considerations

Eligible studies included in this scoping review demonstrated it is possible to positively influence health equity; however, the focus on individual level led to a failure to address the underlying causes of the health inequities experienced by the populations studied ^{6,25} which included people with developmental disabilities ²¹, racial and ethnic minorities ^{19,20}, people with low incomes ¹⁹, people with functional needs ²², and older adults ^{23,24}.

Health promotion is an approach which aims to enable individuals and communities to take charge of their own health through addressing underlying causes of health inequities³² and can be incorporated throughout all phases of the emergency management cycle^{33,34}. For example, broad public health interventions such as masking policies can reduce or prevent exposure to pathogens during a pandemic, which protects individuals at higher risk of complications by reducing community transmission³⁵. Mitigation measures can be informed through engagement with priority populations³⁶. During an emergency response, ensuring that risk communications are made accessible to priority populations by accommodating functional³⁷ and language³³ needs. Furthermore, engaging priority populations and organizations serving them during recovery can influence proactive measures to address social determinants of health before the next emergency³⁴

Emergencies can present complex challenges across sectors³⁸ and health equity outcomes are influenced by multiple intersecting and interacting factors including systems of power, relationships and networks, individual factors, and physiological pathways²⁵ at various levels from individual to society³⁹. While each phase of the emergency management cycle has distinct objectives³⁸, phases can occur in sequence or simultaneously¹⁰, which may require integration of complex objectives to meet the needs of people impacted by emergencies.

O’Sullivan et al.³⁸ argue that to address complexities, an understanding of how factors interact and influence each other is needed. The Health Equity Framework can guide the unravelling process by demonstrating how different factors interact with each other to either positively or negatively influence health outcomes²⁵. The Population Health Promotion Model can guide understanding of complexities, when designing research and interventions involving people

impacted by emergencies, through the integration of comprehensive action strategies to address various social determinants of health from individual to societal levels ³⁹.

Finally, the complex nature of addressing health inequities before, during, and after emergencies calls for consultation, collaboration, and coordination across sectors ³⁸. For example, lessons learned from a community resilience project piloted in Brampton, Hamilton, and Toronto revealed that collaboration and coordination between municipal emergency management programs, faith-based and community serving organizations, and local public health units was essential to address factors influencing resilience ⁴⁰.

4.3 Strengths and Limitations

One strength of this scoping review is the inclusion of both qualitative and quantitative research methodology to promote a holistic understanding of how health equity can be influenced by public health units throughout the emergency management cycle. For instance, Zod et al. ²² found that all participants were able to access post-exposure prophylaxis medication; however, qualitative data collected from participants identified gaps and opportunities for further improvement.

The preliminary search which did not exclude any dates yielded over 46,000 articles. Due to time and budgetary limitations and language use that would be considered inappropriate by today's standards, studies published before 2012 were excluded and some relevant information may have been missed.

Additionally, some relevant literature may have been excluded due to the limitation of English language.

While research on interventions that were not specific to health equity were excluded it is possible that some studies regarding general Emergency Management approaches may have been

transferable to work with priority populations. Furthermore, the absence of interventions beyond the individual level may be a result of inadvertently excluding research focused on broader population-level interventions by including only studies focused on priority populations or specific determinants of health. Furthermore, limiting eligible studies to public health specifically may have led to missed opportunities to learn about how public health can work with other sectors to influence health equity as determinants of health also exist outside of the health sector.

Stage 6 of the scoping review process, the consultation exercise, was not completed due to time and resource constraints. Limitations regarding the exclusion of this step may have been mitigated since 3/4 of the research team has extensive experience and knowledge in public health and working with priority populations. Furthermore, half of the research team has at least five years of professional experience in public health Emergency Management. Note that while the consultation exercise was not completed for this review, it may be completed later to guide intervention design or planning of further research.

5 CONCLUSION

In the available evidence supporting interventions intended to positively influence health equity, preparedness was the only phase of emergency management addressed. While improvement in awareness and/or knowledge related to preparedness was noted ($n = 3$)^{21,23,24}, there are some caveats. For instance, Eisenman et al.²¹ only noted a significant difference in the group of individuals with developmental disabilities who had support from an independent living services worker, suggesting that incorporating social supports is important in interventions aiming to improve emergency preparedness in this population. Behaviors and decision-making regarding preparedness did improve post intervention ($n = 3$)^{19,23,24}; however, Glik et al.¹⁹ noted

significant effects regarding decision-making to create a personal emergency communication plan. These effects were only noted in the high intensity group and in women who are unmarried and individuals with higher perceived self-efficacy and changes in decision making regarding emergency supplies findings were barely significant, possibly because preparedness actions such as gathering supplies and extra food is not feasible for people with low incomes due to restricted available resources ⁶. Interventions seeking to promote emergency preparedness behaviours in populations with low incomes must focus on activities that are within their means, such as peer support ⁴⁰; furthermore, active engagement such as providing in-person workshops appears to be more impactful than passive engagement such as mail distribution of written material ¹⁹. Outcomes were not clearly described in one study ²⁰, limiting the authors' ability to draw conclusions. Further research is needed to understand how public health units can positively influence health equity throughout all phases of the Emergency Management Cycle.

There is a need to shift from the traditional focus of risk management to resilience ³⁸. Acknowledging and understanding the complexities related to emergencies and factors influencing health outcomes may guide this shift. Combining the Health Equity Framework ²⁵ with the Population Health Promotion Model ³⁹ to unravel complexities may enhance comprehension of contributing factors in a way that is more accessible for other sectors and potential partners and, as a result, may promote collaboration across sectors ³⁸.

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Chapter 5: Integrated Discussion

Introduction

Health has been long recognised as a human right and “health for all” has been a highly coveted outcome (World Health Organization, 1978, 2018). Despite global commitments to “health for all,” health inequities persist (Rifkin, 2018) and can be exacerbated by emergencies which can cause widespread illness, injury, death, and disruptions in access to healthcare and other supports (Davis et al., 2010; Rottman et al., 2010; World Health Organization, 2021). People who are already experiencing inequities carry a disproportionate burden of adverse health impacts resulting from emergencies (Alberti et al., 2020; Levine & Jansson, 2021; Mishra et al., 2022; Public Health Agency of Canada, 2020).

Throughout my nursing career in public health, the importance of health equity has been emphasized, yet within the practice of public health emergency management, strategies to positively influence health equity have been challenging to design and implement. The overall aim of this thesis was to gain a better global understanding of how public health units could positively influence health equity throughout the emergency management cycle, which includes prevention, mitigation, preparedness, response, and recovery.

In this chapter, the scoping review completed as part of this thesis, the Population Health Promotion Model (Public Health Agency of Canada, 2001), and the Health Equity Framework (Peterson et al., 2021), followed by main points arguing elements needed to positively influence health equity through all phases of emergency management, namely: (1) health promotion, (2) acknowledging and understanding of the complexities of emergency management and health equity, and (3) intersectoral consultation, collaboration, and coordination will be outlined.

Finally, strengths and limitations, beyond those specific to the scoping review discussed in Chapter 4, as well as implications for nursing practice will be discussed.

Main Findings

Influencing Health Equity Throughout the Emergency Management Cycle: A Scoping Review

The scoping review completed for this thesis was titled “Influencing Health Equity Throughout the Emergency Management Cycle” and the aim, as the title suggests was to gain a better global understanding of how public health units could positively influence health equity through emergency management. The scoping review was completed using methodology developed by Arksey and O’Malley (2007) and built upon by Levac et al. (2010) and Westphaln et al. (2021). All studies which met the inclusion criteria focused on the preparedness phase of emergency management, aligning with public health practice, which tends to focus on prevention, mitigation, and preparedness (Bochenek et al., 2015). A synthesis of the findings concluded that while some individual level interventions such as education and training related to emergency preparedness and clinical accommodations for people with functional needs may influence some aspects of health equity, evidence is limited and there is a need for broader, community, sector, or population-level interventions.

The Health Equity Framework

Following a review of existing theoretical frameworks examining determinants of health on varying levels, and interviews with key informants working in health equity, public health, and social science, Peterson et al. (2021) concluded that a framework focused on upstream, population-level interventions was needed. The Health Equity Framework was developed to provide a science and justice-based framework to guide nurses and other public health practitioners to promote health equity through their research and intervention design. With equity

at the centre, the framework demonstrates how determinants of health interact with one another and how they can influence health equity outcomes. Determinants of health are categorized into four “spheres of influence”, including relationships and networks, systems of power, physiological pathways, and individual factors (Peterson et al., 2021). For example, in studies included in the scoping review completed for this thesis, relationships and networks were influenced in interventions promoting social support networks for emergency preparedness as described by Tannous et al. (2017) and Matuso et al. (2021). Eisenman et al. (2014) addressed relationships and networks through a peer-mentored emergency preparedness program. Systems of power were addressed through promoting access for priority populations to develop knowledge and skills individuals would need to prepare for emergencies (Eisenman et al., 2014; Glik et al., 2014; Hung et al., 2021; Matuso & Hirano, 2021; Tannous et al., 2017). Zod et al. (2014) addressed physiological pathways through clinical accommodations which enabled patients to perform at their full capacity. Finally, Glik et al. (2014) assessed the impact of a preparedness intervention on individual factors such as attitudes, beliefs, and behaviours.

The Population Health Promotion Model

The Population Health Promotion Model guides population health interventions through addressing three components: determinants of health, comprehensive action strategies, and levels of intervention, from individual to population (Public Health Agency of Canada, 2001). Several of the interventions described in eligible articles reviewed involved developing personal skills at the individual level through emergency preparedness education.(Eisenman et al., 2014; Glik et al., 2014; Hung et al., 2021; Matuso & Hirano, 2021; Tannous et al., 2017). In this example, some of the determinants of health addressed include education (Eisenman et al., 2014; Glik et al., 2014; Hung et al., 2021; Matuso & Hirano, 2021; Tannous et al., 2017), social supports and coping skills (Eisenman

et al., 2014; Matuso & Hirano, 2021; Tannous et al., 2017), and healthy behaviours (Glik et al., 2014; Matuso & Hirano, 2021; Tannous et al., 2017). The interventions are at the individual level, and the comprehensive action strategies focused on developing personal skills (Eisenman et al., 2014; Glik et al., 2014; Hung et al., 2021; Matuso & Hirano, 2021; Tannous et al., 2017) and reorienting health services (Eisenman et al., 2014; Glik et al., 2014; Hung et al., 2021; Matuso & Hirano, 2021; Tannous et al., 2017; Zod et al., 2014). In the study completed by Zod et al. (Zod et al., 2014), the clinical accommodations for people with functional needs created a supportive environment and reoriented health services by reducing barriers to accessing post-exposure prophylaxis medication. The intervention was at the individual level, and some of the determinants of health addressed included physical environments, access to health services and biology (Zod et al., 2014).

Main Points

Health Promotion Can Influence Health Equity Throughout the Emergency Management Cycle

Health promotion is one approach that may assist in addressing health inequities at the individual level and beyond (Hope Corbin et al., 2021; Kennedy et al., 2019; Public Health Agency of Canada, 2001). Using the comprehensive action strategies from the Population Health Promotion Model (Public Health Agency of Canada, 2001) as a guide, I will demonstrate how social determinants of health can be addressed during each phase of the emergency management cycle, including prevention, mitigation, preparedness, response, and recovery.

Table 1*Strengthening Community Action*

Phase of Emergency Management Cycle	Example
Prevention	Adapting policies in institutions to maintain access to social contact during a pandemic to prevent negative psychosocial impacts in people with disabilities who may be otherwise isolated (Jesus et al., 2021)
Mitigation	Engaging priority populations in community-based outbreak investigation and response activities can inform mitigation efforts (Oza et al., 2023)
Preparedness	Engaging communities in mapping activities and capacity assessments can support the development of plans which consider the unique needs of the populations impacted by emergencies (Jackson et al., 2016)
Response	Activating a “buddy system” in which residents of high-rise buildings check in on and support each other during emergencies (Murray & Poland, 2020).
Recovery	Engaging with priority populations and community serving organizations during recovery to guide planning for future emergencies, through sharing experiences and lessons learned, can assist in addressing social determinants of health proactively (Kennedy et al., 2019)

Table 2*Building Healthy Public Policy*

Phase of Emergency Management Cycle	Example
Prevention	Broad public health interventions such as mask-wearing policies during a pandemic can reduce or prevent exposure to infectious diseases (Keim, 2018).
Mitigation	Policies enabling equitable access to vaccines and health services by prioritizing people with the highest risk of exposure can mitigate the health impacts of an infectious disease pandemic (Auerbach et al., 2023; Keim, 2018; Tan et al., 2023).
Preparedness	Engaging people with disabilities in developing emergency preparedness plans and policies can ensure that their unique needs are considered and addressed in the process (Jesus et al., 2021).
Response	Ensuring that risk communication is accessible by considering functional needs (Jesus et al., 2021) and ensuring important information is available in multiple languages (Hope Corbin et al., 2021)
Recovery	Incorporating health in all policies to consider underlying causes of inequities during recovery can enhance resilience during the next emergency (Kennedy et al., 2019).

Table 3*Creating Supportive Environments*

Phase of Emergency Management Cycle	Example
Prevention	Educating the public on how to reduce their exposure to an infectious disease can create an environment facilitative in preventing or reducing the spread (Keim, 2018).
Mitigation	Institutional vaccination policies can make environments safer for staff and residents who may be at greater risk for illness related complications (Tan et al., 2023).
Preparedness	Building supporting networks in a community when preparing for emergencies can enhance community resilience (Liu et al., 2022).
Response	Ensuring that clinical services are accessible to people with functional abilities by implementing accommodations enables equitable access to impacted individuals (Zod et al., 2014).
Recovery	Engaging with priority populations and community-serving organizations can ensure that social determinants of health are addressed proactively (Kennedy et al., 2019).

Table 4*Developing Personal Skills*

Phase of Emergency Management Cycle	Example
Prevention	Education and health communication strategies informing the public about how to minimize their risks (Keim, 2018).
Mitigation	Risk reduction communications informing the public of how to reduce the risk of adverse outcomes after being exposed (Keim, 2018).
Preparedness	Targeted educational interventions with priority populations can influence emergency preparedness attitudes (Glik et al., 2014) and behaviours (Eisenman et al., 2007; Hung et al., 2021; Matuso & Hirano, 2021; Tannous et al., 2017).
Response	Collaborating with local influencers within priority population communities may promote discussion, address concerns, and promote healthy behaviours among individuals who may not trust governments or health authorities (Hope Corbin et al., 2021).
Recovery	Building community resilience by training residents so that they can develop skills necessary to support each other during emergencies, based on identified needs following a disaster (Wells et al., 2013).

Table 5*Reorienting Health Services*

Phase of Emergency Management Cycle	Example
Prevention	Harm reduction education to groups most likely to be exposed (Keim, 2018).
Mitigation	Ensuring equitable access to vaccines and health services by prioritizing groups with the highest degree of exposure to an infectious disease (Auerbach et al., 2023; Tan et al., 2023).
Preparedness	Involving people with disabilities in pandemic preparedness can promote disability-inclusive plans (Jesus et al., 2021).
Response	Tailoring outbreak investigation and response activities to meet the specific needs of a community can promote equity through addressing social determinants of health (Oza et al., 2023).
Recovery	Adapting practices based on lessons learned can address gaps influencing health equity (Hope Corbin et al., 2021; Schnall et al., 2017).

Acknowledging and Understanding the Complexities of Emergency Management and Health Equity is Key to Effective Intervention Design

Emergencies present complex challenge as they impact multiple sectors and resilience is influenced by core factors such as dynamic context, awareness, connectedness, collaboration, and adaptive response which interact and influence people, information, structures, and networks, which in turn, influence the core factors (O’Sullivan et al., 2012). To add to this complexity, health equity is influenced by multiple, interacting determinants of health at various levels, including individual, family, community, sector / system, and society (Peterson et al., 2021; Public Health Agency of Canada, 2001). Furthermore, phases of emergency management have distinct objectives (O’Sullivan et al., 2012) and can occur sequentially or concurrently (Emergency Management Ontario, 2021), which may require a weaving together of multiple complex objectives to meet the needs of people impacted by an impending or actual emergency.

For example, relationships and networks can influence support systems and have the potential to either promote equitable outcomes through encouraging healthy behaviours, or cause inequities by enabling harmful behaviours (Peterson et al., 2021). Promoting connectedness between residents and formal institutions, community and other resources can increase resilience at a community level through social capital, which refers to social networks and relationships built through trust and familiarity (bonding social capital), common causes (bridging social capital), and connections to formal institutions (linking) (Wong & Kohler, 2020); however, social capital can also be exploited and present risks, as it can facilitate the spread of misinformation within groups who do not trust governmental and health authorities due to experiences of racism and discrimination (Contreras et al., 2023).

To develop effective interventions which positively influence health equity, in the context of emergency management, complexities must first be unraveled. O'Sullivan et al. (2012) suggest that the key is to understand how factors interact with and influence each other. To facilitate the process, I suggest layering the Health Equity Framework, which demonstrates how multiple spheres of influence interact with each other to influence health outcomes (Peterson et al., 2021) with the Population Health Promotion Model, which accounts for determinants of health which can be influenced by comprehensive action strategies at multiple levels from individual to society as a whole (Public Health Agency of Canada, 2001) and then applying the models to the emergency management cycle, which defines distinct objectives for each phase (Emergency Management Ontario, 2021). For example, priority populations with functional needs may be impacted by determinants of health such as access to health services and physical environments. Zod et al. (2014) addressed these determinants of health using the comprehensive action strategies creating supportive environments and reorienting health services to

accommodate individual functional needs during an exercise testing accessibility to post-exposure prophylaxis. The exercise prepared emergency responders to better support people with functional needs by identifying gaps in service (Zod et al., 2014). Access to health services and other supports which provide conditions and opportunities necessary to achieve optimal health outcomes are influenced by systems of power, and in the case of Zod et al. (2014), physiological pathways by maximizing physical, cognitive, and psychological abilities of individuals to access service (Peterson et al., 2021). “One-size fits all” approaches do not adequately address the specific needs of individuals and communities to influence health equity (O’Sullivan et al., 2012); for example, while emergency preparedness education can influence attitudes and behaviours with respect to emergency preparedness (Glik et al., 2014), interventions that do not address the unique circumstances influencing health equity such as income and physical environments, may fall short of promoting equity as some generalized recommendations such as stockpiling food and other emergency supplies are not realistic or feasible due to limited material resources (O’Sullivan et al., 2012; Smith et al., 2022), and may lead to further inequities (Bournival et al., 2022). By understanding what factors influence an individual or community’s capacity to prepare for emergencies, interventions can be tailored to address specific determinants of health (O’Sullivan et al., 2012). When complexities are not considered in intervention design, potential harms of interventions may be overlooked; for instance, to reduce the spread of COVID-19, institutions, and care settings restricted visitors from entering, which led to disruptions in care and social supports for people with disabilities (Jesus et al., 2021). A more flexible approach, facilitating access to care and social supports for people with disabilities may have reduced the adverse psychological impacts experienced (Jesus et al., 2021). Access to health services and other supports which provide conditions and opportunities necessary to

achieve optimal health outcomes are influenced by systems of power, and in the case of Zod et al. (2014), physiological pathways by maximizing physical, cognitive, and psychological abilities of individuals to access service (Peterson et al., 2021). “One-size fits all” approaches do not adequately address the specific needs of individuals and communities to influence health equity (O’Sullivan et al., 2012); for example, while emergency preparedness education can influence attitudes and behaviours with respect to emergency preparedness (Glik et al., 2014), interventions that do not address the unique circumstances influencing health equity such as income and physical environments, may fall short of promoting equity as some generalized recommendations such as stockpiling food and other emergency supplies are not realistic or feasible due to limited material resources (O’Sullivan et al., 2012; Smith et al., 2022), and may lead to further inequities (Bournival et al., 2022). By understanding what factors influence an individual or community’s capacity to prepare for emergencies, interventions can be tailored to address specific determinants of health (O’Sullivan et al., 2012). When complexities are not considered in intervention design, potential harms of interventions may be overlooked; for instance, to reduce the spread of COVID-19, institutions, and care settings restricted visitors from entering, which led to disruptions in care and social supports for people with disabilities (Jesus et al., 2021). A more flexible approach, facilitating access to care and social supports for people with disabilities may have reduced the adverse psychological impacts experienced (Jesus et al., 2021).

Consultation, Collaboration, and Coordination Across Sectors is Essential to Address Underlying Causes of Inequities

The complex nature of emergency management and factors influencing health equity throughout the phases of prevention, mitigation, preparedness, response, and recovery calls for consultation, collaboration, and coordination across sectors (O’Sullivan et al., 2012).

Many determinants of health fall outside of the typically understood scope of “health” (Public Health Agency of Canada, 2001); however, I would argue that health has a place in all sectors. Nurses and other public health practitioners can contribute to discussions with policy makers and decision makers to incorporate health in all policies; for instance, nurses can advocate for “building back better” during recovery to create physical environments which are supportive to community resilience, rather than the more common “back to normal” approach, which focuses on maintaining the status quo and fails to address determinants of health proactively (Kennedy et al., 2019).

Two studies in the scoping review completed for this thesis described community-based emergency preparedness interventions which engaged priority populations were part of a larger community resilience project in Los Angeles (Eisenman et al., 2014; Glik et al., 2014). To ensure complexities were considered and addressed, key partners including first responders, neighbourhood watch members, faith-based organizations, the business community, and representatives from priority populations including people with developmental disabilities (Eisenman et al., 2014) and Latinx people with low incomes (Glik et al., 2014) were consulted as interventions were being designed (Wells et al., 2013).

The Lighthouse Project was piloted in Brampton, Hamilton, and Toronto in which each city approached the project differently based on community needs and capacity with

collaboration across sectors (Murray & Poland, 2020). Using the Toronto intervention as an example, a grass-roots climate resilience organization led the project and trained residents of a high-rise building to respond to emergencies by checking in on each other through a “buddy system” and collaborated with a local church to provide additional training residents to support their community during emergencies by opening up the church to residents and serving as a communication hub for information sharing between the church and the community (Murray & Poland, 2020). When reflecting on lessons learned from the Lighthouse Project, Murray and Poland (2020) noted the importance of collaboration and coordination between municipal emergency management programs, faith-based and community serving organizations, and public health units to build community resilience. Public health’s focus on promoting and maintaining health and wellness makes it a valuable partner in community development activities and in working with grass-roots organizations to build resilience to extreme weather emergencies. Additionally, public health units may offer a connection between municipal emergency management programs and local organizers (Murray & Poland, 2020).

As demonstrated in the aforementioned examples, in order to build resilience to emergencies in communities, the focus must shift from risk management, traditionally implemented by emergency management programs, to resilience (O’Sullivan et al., 2012). The complexity of resilience requires input from multiple sectors to ensure interacting factors influencing health equity are addressed comprehensively (O’Sullivan et al., 2012).

Strengths and Limitations

Strengths

Acknowledgement of the complex nature of influencing health equity throughout the emergency management cycle facilitates the development of interventions considering the

unique needs of communities and tailoring of interventions to promote health, while reducing potential harms (O’Sullivan et al., 2012). I feel that combining the Health Equity Framework (Peterson et al., 2021) with the Population Health Promotion Model (Public Health Agency of Canada, 2001) to unravel complexities will simplify contributing factors in a way that may be more accessible for other sectors and potential partners and as a result, may promote collaboration across sectors (O’Sullivan et al., 2012).

Limitations

As mentioned above, layering the Health Equity Framework (Peterson et al., 2021) and the Population Health Model (Public Health Agency of Canada, 2001) may help unravel the complexities of influencing health equity throughout the emergency management cycle. In this vein, incorporating determinants of health, comprehensive action strategies, and levels of intervention which make up the Population Health Promotion Model (Public Health Agency of Canada, 2001), in the search methodology may have produced results including empirical literature addressing health equity using more upstream approaches beyond the individual level of intervention, which is needed to address the complexities within health equity and emergency management.

Disciplinary Implications

Practice

Recognising the complex nature of social determinants of health, health equity, and emergency management and considering how these components interact to influence one another may aid in the design of tailored interventions aiming to positively influence health equity throughout the emergency management cycle (O’Sullivan et al., 2012), while reducing potential harms through accommodating unique needs of priority populations (Jesus et al., 2021). For

example, I have started work in a low-income community with a high prevalence of isolated older adults and newcomers to prepare for emergencies at a community level through collaboration with partner agencies directly serving and engaging residents of the community. The work focuses on a Connected Community Approach, which focuses on building, maintaining, and sustaining relationships between people living in communities and the institutions that serve them (Poland et al., 2021). Use of this approach was influenced by my own increased understanding of the complex challenges presented by emergencies, which developed throughout my work on this thesis.

Education

Nursing in and of itself is complex – which has been reflected in discourses on nursing and attempts to theoretically define the term nursing in both my undergraduate and graduate studies. We learn about nursing as both an art and a science, a vocation, a regulated profession, and a distinct academic discipline; however, based on my own learning experiences and what I have observed when supervising undergraduate nursing students, the understanding of nursing is often disproportionately focused on hospital-based and bed-side practice. As discussed in previous chapters, public health, emergency management, and health equity are also multi-dimensional concepts which are, at times, difficult to explain tangibly. In fact, when I started working in emergency management, I had already been a public health nurse for ten years, yet I struggled to understand how my work in emergency management was relevant to nursing practice. I speculate that tools such as the Health Equity Framework (Peterson et al., 2021) and the Population Health Promotion Model (Public Health Agency of Canada, 2001) can be used together to better comprehend social determinants of health, health equity, and comprehensive action strategies at varying levels as well as how these factors can influence each other, in

addition to outcomes related to health equity. Using frameworks and models to sort through information can make it easier for learners to understand (O’Sullivan et al., 2012). Once organized, factors contributing to health equity outcomes can be applied to the phases of emergency management to develop interventions aligning with the specific objectives of each phase (O’Sullivan et al., 2012). Findings from the scoping review completed for this thesis may facilitate discussion of emergencies with public health impacts, and the role of public health nurses in addressing health equity throughout the emergency management cycle.

Leadership and Policy

As argued by Dillard-Wright (2022) and Florell (2021), nurses can lead positive change by challenging the status quo. Public health nurses and community health nurses are well positioned to advocate for community interventions to influence health equity, due to their understanding of social determinants of health within the context of the communities in which they work and their connections to people living in communities, service providers, faith-based organizations, and local governments (Heagele et al., 2017). Click or tap here to enter text. A clear understanding of how determinants of health, comprehensive action strategies, levels of interventions, and spheres of influence interact with one another to contribute to health equity outcomes throughout the emergency management cycle may guide nurse leaders in collaborating with other sectors to influence policy and programs impacting the health of priority populations. Additionally, this understanding can raise awareness and provide guidance to nurses in decision-making roles about how complexities can influence positive or negative health equity outcomes.

Research

Individual level interventions fail to address the underlying causes of health inequities (Peterson et al., 2021), so there is a need for more research on upstream interventions, beyond

the individual level to guide evidence informed intervention design. For example, Heagele et al. (2017) suggest that participatory action research, in collaboration with communities and partners is needed to assess and predict disaster-related community resilience. I feel that this type of research may also be useful to evaluate my current community-based emergency preparedness work, as it aligns well with the Connected Community Approach, which emphasizes involving impacted community members throughout the research or community development process and enables community members to lead initiatives that meet their unique needs (Heagele et al., 2017; Poland et al., 2021). Furthermore, research exploring how public health can best work with other sectors to influence health equity throughout the emergency management cycle may clarify consultation, collaboration, and coordination processes to assist nurses and other public health practitioners in their advocacy to work to address underlying causes of inequities.

Overall Conclusions

Despite public health's emphasis on the importance of health equity and upstream interventions, the results of the scoping review completed for this thesis highlight the tendency to focus on individual levels of intervention (Bournival et al., 2022; O'Sullivan et al., 2012; Peterson et al., 2021). Interventions beyond the individual level are needed to positively influence health equity in priority populations (Bournival et al., 2022; Peterson et al., 2021; Wells et al., 2013). To design comprehensive interventions, factors influencing health equity, determinants of health, and spheres of influence must be organized (O'Sullivan et al., 2012). Approaches that layer the Health Equity Framework (Peterson et al., 2021) and the Population Health Promotion Model (Public Health Agency of Canada, 2001) may guide the process. To facilitate the application of levels of intervention, determinants of health, comprehensive action strategies and factors influencing health outcomes to the phases of the emergency management

cycle to design interventions aligning with the specific objectives of each phase. In addition to facilitating intervention design, considering the complex nature of both emergency management and health equity may promote understanding among nurses, other public health practitioners and partners from other sectors in how they can work together to meet the needs of priority populations (O’Sullivan et al., 2012). This simplification may also make it easier for learners to understand health equity in the context of emergency management and may facilitate the development of research questions, interventions, and review methods.

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Appendix A: Peer Reviewed Search Strategy

Health Unit: [Redacted]

Address: [Redacted]

Initial Run and Keyword Language Harvest: 15-Jan-2021

On hold until March 2022

Revised Request: Sent for PRESS 16-Mar-2022

Translation of Strategy & Output of Results: 6-Apr-2022

Name	Contact Information	Role
[Redacted]	[Redacted]	Lead

Background

Topic:

Health equity & Emergency management

Purpose:

Scoping review – MA thesis program project

Type of Search Required:

Scoping Review – JBI Protocol Methodology

Ongoing Research Check:

Permission to request PRESS review from OPHLA colleagues

Question(s):

"What is known from the existing literature about how health equity can be applied throughout the emergency management cycle."

Search

Concept Map:

[HEALTH EQUITY + (DISASTERS + MANAGEMENT CYCLE BROAD) OR (COVID/PANDEMICS + MANAGEMENT CYCLE NARROW) MeSH OR

[HEALTH EQUITY + (DIASERS ADJ4 MANAGEMENT CYCLE BROAD)] KW OR

[HEALTH EQUITY + (COVID/PANDEMICS ADJ4 MANAGEMENT CYCLE NARROW) KW

Definitions:

HEALTH EQUITY:

I will be using the definition from [this framework](#) to define health equity “...having the personal agency and fair access to resources and opportunities needed to achieve the best possible physical, emotional, and social well-being...”

Health Equity includes: social determinants of health; stigma; people experiencing lower income; people experiencing homelessness; Indigenous peoples; ethnic minorities; racialized; persons in contact with the law; gender equity, differently abled persons "

Ethnic minority language limited to general terms; excludes specific populations

Excludes mental health/illness diagnoses/terminal illness; rural and/or urban population language (but includes access to services); specific age groups without equity terms; military personnel

EMERGENCY / MANAGEMENT CYCLE:

"This link is to a document “Adopting a Health Equity Lens in Emergency Management”, which adds some context regarding health equity in relation to emergency management:

<http://haznet.ca/adopting-health-equity-lens-emergency-management/>"/

Emergency management cycle includes = prevention, mitigation, preparedness, response, recovery

Includes population planning and policy in relation to emergency situations

Emergencies include:

Emergency shelter, mass casualty incidents, climate change, natural disasters, infrastructure failures

Pandemics: limited to general language / COVID-19

Pandemic/epidemic terms combined with narrow management cycle terms to remove irrelevant results related to clinical administration of immunization, drugs, and/or medical care

Emergencies exclude:

Weapons, war, mass casualty incidents, terrorist attacks, crimes, nuclear attacks, cyber attacks and violence terms

Earlier Pandemics Outside of date range: such as the 1918, 1958, and 1969 flu, HIV/AIDS pandemic, obesity pandemic, Tuberculosis/ or Latent Tuberculosis/ or Peritonitis, Tuberculous/ or Volcanic Eruptions/ or Water Supply/ or Chikungunya Fever/ or Chikungunya Virus/ or Yellow Fever Virus/ or Yellow Fever/ or Zika Virus/ or Zika Virus Infection/ or Crimean-Congo Haemorrhagic Fever/ or Influenza A Virus, H1N1 Subtype/ or Middle East Respiratory Syndrome Coronavirus/ or Nipah Virus/ or

Monkeypox/ or Lassa Fever/ or Marburg Virus Disease/ or Hemorrhagic Fever, Ebola/ or SARS Virus/ or Severe Acute Respiratory Syndrome/ and general fevers/illnesses and influenza A viruses which have not become pandemic: (i.e., influenza a virus/ or influenza a virus, h10n7 subtype/ or influenza a virus, h10n8 subtype/ or influenza a virus, h1n2 subtype/ or influenza a virus, h2n2 subtype/ or influenza a virus, h3n8 subtype/ or influenza a virus, h5n1 subtype/ or influenza a virus, h5n2 subtype/ or influenza a virus, h5n8 subtype/ or influenza a virus, h7n1 subtype/ or influenza a virus, h7n2 subtype/ or influenza a virus, h7n3 subtype/ or influenza a virus, h7n7 subtype/ or influenza a virus, h7n9 subtype/ or influenza a virus, h9n2 subtype/

Home accidents or individual accidents or individual acts of violence

"Biological hazard" term - due to crossover with medical waste – terms to indicate accident, weapon or spill for emergency coverage

Falling space debris

Mass infestations

PUBLIC HEALTH AGENCIES

Includes terms that mean public health as an 'organization' or programs / services or individuals who work there

Search Inclusion/Exclusion Criteria:

Include:

English language

2012 – present (*Expanded to 2012 to capture Emergency Management articles, pandemic terminology narrowed to eliminate off-topic articles*)

All study types

Involve at least one component of emergency management cycle (prevention, mitigation, preparedness, response, recovery)

Community or population level outcome

Decision to limit keyword terms to non-indexed records due to appropriate coverage by MeSH terminology

Exclude:

Languages other than English

Pre-2012 publications

Articles not related to emergency management (i.e. – articles about emergency department visits outside of public health emergencies; recovery room outcomes, etc.)

Individual level outcome

SCREENING INCLUSION/EXCLUSION CRITERIA:

Data must be included in the publication or through contact with the authors, if feasible.

Client Requested Language to Include:

((Health equity OR health inequity OR health parity OR health disparity OR priority populations OR vulnerable OR marginalized OR disadvantaged OR underprivileged OR underserved OR underserved)
AND (Emergency OR disaster OR crisis OR prevention OR mitigation OR preparedness OR response OR recovery))

Limitations:

1st Concept: Emergency Management Cycle

Limited Pandemic / Epidemic terms to narrow management cycle concept

Rational for narrowing management cycle terms: combining pandemic/epidemic terms with broad management cycle concept retrieved clinical administration of immunization, drug safety, medical care, etc. (ex. [COVID-19 AND Safety Management] retrieved adverse effects of immunization, needlestick injuries, and hospital intubation protocols. Whereas [Emergencies/ and Safety Management/] retrieved articles focusing on organizational safety management procedures for emergencies. Based on these results, the decision to narrow the scope of epidemic/pandemic language was made. Using a narrower specific scope may result in missed pertinent literature.

2nd Concept: Health Equity

Health Equity

Narrowed all KW terms to (not medline.st.) due to appropriate coverage in MeSH terminology

3rd Concept – Public Health

Removed due to overlap with Management Cycle terminology

Output of Results (software):

Excel., RIS

Resources / Databases Searched	Date	Results
Ovid MEDLINE(R) ALL <1946 to March 30, 2022>	30- Mar- 2022	2302
Ovid Embase 1974 to 2022 April 04	05- Apr- 2022	3225
Ovid PsycINFO 1806 to March Week 4 2022	05- Apr- 2022	530
EBSCOhost Environment Complete	05- Apr- 2022	111
EBSCOhost CINAHL Complete	06- Apr- 2022	345
<i>Duplicates Removed</i>	06- Apr- 2022	2272
Total	06- Apr- 2022	4242

Appendix Search Strategy

The following search strategy has been provided for your review. For dissemination or publication of the strategy and to request search methodology please contact library@kflaph.ca. Thank you!

Caution: some of the language included below is outdated and may be offensive to readers. Use of such terms are included to gather older research or to retrieve research where MeSH language was applied for the time period.

Ovid MEDLINE(R) ALL <1946 to March 30, 2022>

#	Searches	Results	Type
1	Avalanches/ or Biohazard Release/ or Chemical Hazard Release/ or Climate Change/ or Cyclonic Storms/ or Droughts/ or Disaster Planning/ or Earthquakes/ or Emergencies/ or Explosions/ or Explosive Agents/ or Extreme Cold/ or Extreme Heat/ or Famine/ or Fires/ or Floods/ or Global Warming/ or Greenhouse Gases/ or Landslides/ or Meteoroids/ or Natural Disasters/ or Radioactive Hazard Release/ or Sea Level Rise/ or Snow/ or Structure Collapse/ or Tidal Waves/ or Tsunamis/	128599	Advanced
2	Covid-19/ or SARS-CoV-2/ or ((Epidemics/ or Pandemics/ or Disease Outbreaks/ or Community-Acquired Infections/ or Communicable Diseases, Emerging/ or Plague/) and (flu? or influenza* or respiratory or pneumonia* or zoonos* or zoonotic or plague* or virus* or viral*).ti,kf,kw.)	187037	Advanced
3	"Healthcare Failure Mode and Effect Analysis"/ or "Outcome and Process Assessment, Health Care"/ or "Risk Evaluation and Mitigation"/ or "Wounds and Injuries"/pc or *Health Policy/ or *Policy/ or *Public Policy/ or Adverse Outcome Pathways/ or Behavioral Risk Factor Surveillance System/ or Capacity Building/ or City Planning/ or Community Medicine/ or Community Psychiatry/ or Disaster Planning/ or Government Regulation/ or Guideline/ or Health Planning/ or Legislation as Topic/ or Legislation/ or MEDICAL COUNTERMEASURES/ or Organizational Policy/ or Practice Guideline/ or Program Evaluation/ or Public Health Administration/ or Public Health Practice/ or Public Health/ or Quality Improvement/ or Relief Work/ or Rescue Work/ or Risk Assessment/ or Risk Management/ or Safety Management/ or Social Control Policies/ or Social Control, Informal/ or Social Planning/ or Strategic Planning/ or Strategic Stockpile/ or Total Quality Management/	837518	Advanced
4	Health Policy/ or Policy/ or Public Policy/ or Health Planning/ or City Planning/ or Organizational Policy/ or Public Health Administration/	188647	Advanced

or Public Health Practice/ or Legislation as Topic/ or Social Control Policies/ or Disaster Planning/

5	1 and 3 [NATURAL DISASTERS & BROAD MANAGEMENT]	23061	Advanced
6	2 and 4 [PANDEMICS/EPIDEMICS & NARROW POLICY/MANAGEMENT]	4184	Advanced
7	((extreme event* or ("level 1" or "level 2" or "level 3") adj1 event*)1035 or extreme event* or national security event* or ((asteroid* or comet* or meteor*) adj3 (impact* or collision* or crash*)) or ((bridge* or building* or infrastructure*) adj2 collaps*) or (infrastructure adj2 fail*) or ((city or block? or building* or forest* or houses or homes or wild) adj2 fire*) or ((financial or banking or currenc*) adj2 (cris?s or collaps*)) or (hijack* adj2 (air or plane? or rail* or train* or boat*)) or ((mass or natural) adj disaster*) or ((radiological or radioactive) adj2 (attack* or accident? or explosive* or explosion* or leak* or release* or spill?)) or ((train? or track? or locomotive? or high speed*) adj3 derail*) or "community acquired infect*" or (biohazard* adj2 release*) or (chemical adj2 (attack* or accident? or explosive* or explosion* or leak* or release* or spill?)) or hazardous material event* or (volcano adj2 erupt*) or (water adj2 contaminat*) or water supply or avalanche* or blizzard* or ice storm* or winter storm* or snow storm* or chihikungunya or climate change* or drought* or earthquake* or evacuation* or explosion? or explosive agent? or extreme cold or cold event* or ((cold or freezing) adj1 (weather warn* or temperatur* warn*)) or extreme heat or heat wave* or heat event* or ((hot or heat) adj1 (weather warn* or temperatur* warn*)) or solar flare* or gamma-ray burst* or famine* or flood* or global warming or greenhouse gas* or landslide* or mudslide* or rockslide* or mass power outage* or mega storm* or cyclone* or severe storm* or severe thunderstorm* or tornado* or hurricane* or geomagnetic storm* or oil spill* or sea level ris* or tidal wave* or typhoon* or tsunامي*) adj4 (((communit* or infrastructure* or lifestyle or normal* or public or school* or social or workplace* or work or facilities or activity or activities or recreation* or service? or gathering? or event?) adj3 (recover* or re-establish* or reinstat* or restor* or resum* or restart* or re-start*)) or ((ease? or easing or lift* or loosen* or end* or relax* or reduc* or gradual* or maintain* or timeline* or timeframe* or time frame* or unwind* or roll* back or remov* or cancel or next step*) adj2 (ban? or banning or lockdown* or lock down* or isolat* or restrict* or	1035	Advanced

quarantin* or social distanc* or physical distanc* or non-essential or nonessential or measure* or rule* or law or laws or legislat* or constraint? or (stay adj2 home) or order or orders)) or ((open* or re-open* or reopen* or exit* or mitigat*) adj2 (plan* or strategy or strategies* or phas* or trajectory or trajectories)) or ((population* or community or communities or cities or city or town or geographic or country or nation) adj2 (recover* or re-establish* or reinstat* or restor* or resum* or restart* or re-start*)) or (emergenc* adj2 (notif* or text* or alert* or system* or communication*)) or (build* adj2 capacit*) or (evaluat* adj2 program*) or (risk adj2 manag*) or (strategic adj2 stockpil*) or city plan* or community medicine or community psychiatry or disaster planning or disaster relief or relief work or guideline* or (guid* adj1 practice*) or hazardscape* or health planning or legislation or legislative or mass screening or medical countermeasur* or policy or policies or policy or policies or preparedness or process model* or process map or process assessment* or public health or quality improvement or improving quality or quality management* or (government adj1 (regulation* or regulate*)) or governance? or rescue work or safety management or managing safety or social control* or social plan* or strategic plan* or surveillance))ti,ab,kf,kw. not medline.st.

- 8 (((((pandemic* or epidemic*) adj4 (flu or influenza* or respiratory or pneumonia* or zoonos* or zoonotic or plague* or virus* or viral*)) or ((flu or influenza* or respiratory or pneumonia* or virus* or viral or human-to-human transmit*) adj3 (swine or pig? or bird? or avian or bushmeat or wet market or livestock or wildlife or animal* or farm* or bat? or porcupine* or primate* or ape or monkey* or poultry or duck? or camel? or bovine or cow?)) or (outbreak* adj2 (pneumonia* or respiratory or virus* or pathogen* or illness* or disease* or viral or zoonos* or zoonotic or plague* or "large scale" or "small scale" or community or region* or local or localized or global or international*)) or acute respiratory infection* or acute respiratory illness* or "severe specific contagious pneumonia" or stuttering chain? betacoronavir* or beta coronavir* or coronavir* or corona vir* or ncov or COVID or 2019nCoV* or nCoV 2019* or nCoV2019* or 2019* nCoV or nCoV 19 or nCoV19* or 19nCoV* or COVID 19 or COVID 2019* or COVID19* or COVID2019* or CORVID 19 or CORIVD19* or CORVID2019* or coronavir* 19 or coronavir* 2019* or 19 coronavir* or 19 corona vir* or 2019* coronavir* or 2019* corona vir* or corona vir* 19 or corona vir* 2019* or corona vir* disease* 2019* or coronavir* disease* 19 or coronavir*
- Advanced

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9	((catastroph* or disaster* or emergenc* or crisis or crises) adj (prepare* or plan* or mitigat* or recover* or prevention or response or respond* or management or managing or manage? or manage or resilienc* or science or planning or communit* or scenario* or national or municipal* or communit* or provincial* or local* or global*)).ti,kf,kw.	9437	Advanced
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11	"Emigrants and Immigrants"/ or "Ethnic and Racial Minorities"/ or "Gender and Sexual Minorities"/ or "Health Disparity, Minority and Vulnerable Groups"/ or "Social Determinants of Health"/ or "Transients and Migrants"/ or Access to Healthy Foods/ or Ageism/ or Bedridden Persons/ or Bias, Implicit/ or Bisexuality/ or Child of Impaired Parents/ or Child Poverty/ or Crime Victims/ or Criminals/ or Cultural Diversity/ or Economic Status/ or Employment/ or exp Ethnicity/ or exp Homosexuality/ or Racial Groups/ or Gender Equity/ or Health Equity/ or Health Impact Assessment/ or Health Inequities/ or Health Services Accessibility/ or Health Services for	1078275	Advanced
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Persons with Disabilities/ or Health Services for the Aged/ or Health Services for Transgendered Persons/ or Health Status Disparities/ or Health Status/ or Healthy Life Expectancy/ or Home Environment/ or Homebound Persons/ or Homeless Persons/ or Homeless Youth/ or Homes for the Aged/ or Homophobia/ or Housing for the Elderly/ or Housing Quality/ or Intersectional Framework/ or Medically Underserved Area/ or Mentally Ill Persons/ or Minority Groups/ or Neighborhood Characteristics/ or Old Age Assistance/ or Ostracism/ or Perceived Discrimination/ or Population Density/ or Poverty Areas/ or Poverty/ or Prejudice/ or Prisoners/ or Prisons/ or Public Assistance/ or Public Housing/ or Public Nondiscrimination Policies/ or Quality Indicators, Health Care/ or exp Racial Groups/ or Racism/ or Systemic Racism/ or Refugees/ or Residence Characteristics/ or Right to Health/ or Self-Efficacy/ or Sex Workers/ or Sex Work/ or Sexism/ or Sexual Minorities/ or Social Behavior/ or Social Capital/ or Social Class/ or Social Conditions/ or Social Deprivation/ or Social Discrimination/ or Social Environment/ or Social Isolation/ or Social Marginalization/ or Social Mobility/ or Social Status/ or Social Stigma/ or Social Structure/ or Social Vulnerability/ or Social Welfare/ or Sociodemographic Factors/ or Socioeconomic Factors/ or Systemic Racism/ or Transgender Persons/ or Transsexualism/ or Unemployment/ or Urban Rural Difference/ or Urbanization/ or Vulnerable Populations/ or Working Poor/ or Xenophobia/ or Health Services, Indigenous/ or Indians, Central American/ or Indians, North American/ or Indians, South American/ or Indigenous Peoples/ or Inuits/ or Native Continental Ancestry Group/ or Oceanic Ancestry Group/ or Indigenous Canadians/

12(immigrant* or emigrant* or disadvantag* or disparit* or displaced 104656 Advanced
 or SDOH or (social adj3 determinant*) or ((transient or migrant) adj
 (person* or people* or population*)) or ((access* or avail*) adj2
 food*) or ageism or ageist or aging population* or ageing
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 bias or biases or bisexual* or impaired or poverty or crime* or
 victim* or violen* or criminal? or (cultur* adj2 divers*) or economic
 status or "under employ*" or underemploy* or unemplo* or
 (seasonal adj1 work*) or ethnic* or racial* or minority or minorities
 or equity or ((gender or sexual) adj2 (minorit* or discriminat* or
 equit*)) or (health* adj2 (equit* or inequit* or equal* or inequal*
 or discriminat* or disparit*)) or health impact* or inequalit* or
 inequit* or disproportionately impacted or health gap? or health
 disparit* or health impact* or underserviced or health parity or

("health* service*" adj1 access*) or ((appointment* or service* or program*) adj2 (availab* or access* or attend* or avoid* or uptake or acceptance or accepting or accepted or utiliz* or utilis* or challeng* or convenien* or barrier* or reject*)) or disparity or disparities or health status or life expectancy or living condition* or social housing or homebound or couch surfer* or doubled up or rough sleeper* or vulnerably housed or ((evict* or expulsion* or los* or fail* or foreclos* or stabil* or unstabl* or precarious* or maintain* or support* or keep* or assistance or aid or financ* or help*) adj1 (house? or housing or living space* or living arrangement* or rent? or rental* or apartment* or living quarter* or lease or leasing or landlord* or residence*)) or (public space* adj2 liv*) or ((street? or sidewalk*) adj2 living) or (communit* adj2 (kitchen* or center* or centre*)) or (soup adj2 kitchen*) or (street? adj2 (involv* or people? or person? or population? or individual? or youth* or teen* or child* or family or families or adult? or living on or living in or public life or public space*)) or homeless* or houseless* or roofless* or vagrant? or beggar?* or ((transitional or emergency or respite or temporary or community or day or violent* or abuse* or battered) adj3 (shelter* or housing or house)) or temporary living or squatter? or ((home? or housing or house*) adj2 (aged or aging or elder* or older adult*)) or homophobia or homophobic or affordable housing or intersectional framework or underserv* area? or mental* ill* or minority or minorities or "new Canadian*" or ((multicultural* or multi-cultural* or multi-ethnic* or multinational or intercultural* or ethno-cultural* or ethnocultural* or low-wage* or multilateral* or multi-national* or multilingual* or diverse) adj3 (neighbor* or popula* or house* or famil* or communit* or group* or area* or region? or hub? or block? or building*)) or ((new or temporar* or permanent* or return*) adj2 (residen* or citizen* or popula*)) or ((new* or recent*) adj3 (residen* or citizen* or popula* or Canadian* or Canada* or Ontario or Ontarian or province*)) or neighbo?rhood characteristic* or ostraci?m or ostraci?ed or indigent or discrimination or discriminate* or ((density or densely or highly) adj2 popula*) or geodemographic? or poor or poverty or poverty line* or impoverish* or low income* or moneyless or prejudice* or incarceration or prison* or jail* or inmate* or "detention center*" or "correctional institution*" or "correctional facilit*" or ((social or public or government* or old* age) adj2 (welfare? or assistance? or security)) or ((under or precarious or assist* or public or publicly or subsidiz* or quality or unstable) adj2 hous*) or ableism or afford* housing or housing choice* or nondiscriminat* or non-discriminat*

or ((public* or community or social or popular or cultural or individual* or personal) adj (perception* or perspective* or attitude* or belief* or opinion* or understanding or rejection* or bias* or "point of view")) or (health adj2 quality indicator?) or racial* or racism or racist or refugee* or first generation* or 1st generation* or residence characteristic* or health right* or "right to health*" or self efficacy or sex work* or sexism or sexist or misogynist* or "2 spirit" or "designated female*" or "designated male*" or "gender fluid*" or "gender minorit*" or "sex work*" or "third gender" or ((sexual* or gender*) adj2 (identi* or orient*)) or (m#n adj2 "sex with m#n") or (wom#n adj2 "sex with wom#n") or 2spirit* or agender* or asexual* or bigender* or bisexual* or cisgender* or gay? or genderqueer* or GLBT* or homosexual* or intersex* or lesbian* or LGBT* or non-binary or nonbinary or nongender* or pangender* or pansexual* or polygender* or queer* or same-sex or sex trade? or sexism or sexual minorit* or third-gender or two spirit* or (social* adj1 (capital or class* or condition? or behavio* or depriv* or discriminat* or environment* or fragment* or isolation* or marginali* or mobility or stigma* or status or structure* or vulnerabl* or welfare)) or (social* adj2 (rejection or exclusion or inclusion or accept* or approv*)) or marginali* or indigent or anti stigma* or antistigma or sociodemographic or displaced or displacement or disproportionately impacted or socio-economic* or socioeconomic* or discrimination or discriminate* or segregat* or nimby* or transgender* or trans? or transandrogyn* or trans-gender* or transsexual* or trans-sexual* or ((no or without) adj1 (employment or income or job or salary)) or jobless* or workless or laid off or layoff* or lay off* or (urban* adj2 rural*) or (vertical adj2 communit*) or (high adj rise*) or (inner adj cit*) or ((vulnerable or priority or underserved* or depriv*) adj2 (population* or group*)) or (priority adj1 (population* or group*)) or ((vulnerable or "at-risk" or "at risk*" or cultur* or underserved or "under served" or under-served or under-served or non-english or priority or incarcerated) adj2 (population* or person* or people* or individual* or communit* or group* or demographic* or area*)) or disadvantag* or disparit* or ((depressed or limited or inferior or little or low or minim* or small* or substandard) adj2 (income* or paid or pay or salary or salaries or wage*)) or ((low* or minimum or poor) adj2 (wage? or pay* or salar*)) or "under employ*" or underemploy* or unemplo* or (without adj1 (employment or income or job or salary)) or jobless* or workless or laid off or layoff* or lay off* or (precarious adj1 (job or jobs or employ* or work)) or ((low* or

fixed) adj2 income?) or underpaid or underpay or xenophob* or
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 or Native American*).ti,kf,kw. not medline.st.

13or/11-12 [HEALTH EQUITY]	1182931	Advanced
1410 and 13	3285	Advanced
15limit 14 to yr="2012 -Current"	2349	Advanced
16limit 15 to english language	2302	Advanced

***Library staff make every effort to provide accurate and complete database search results. However, we assume no liability for information retrieved, its interpretation, applications or omissions.*

Appendix B: Author Biographies

Katrina Coderre, RN, MScN(c)

Nursing Project Officer, Emergency Management Program

Ottawa Public Health

Katrina Coderre is a Nursing Project Officer with Ottawa Public Health's Emergency Management Program, where her work has focused on priority populations. She holds a Bachelor of Science in Nursing from the Northeastern Ontario Collaborative Nursing Program and is currently pursuing a Master of Science in Nursing at the University of Ottawa.

Prior to joining the Emergency Management Program in 2018, Katrina was a Public Health Nurse with the Healthy Sexuality and Risk Reduction Program for ten years, where she provided outreach services to secondary school students, youth experiencing homelessness, sexually and gender diverse youth, and young parents, in addition to her work with the general population.

Through her professional experience, Katrina has directly observed how social determinants contribute to the health of individuals, families, communities, and populations. This work has ignited and nourished her passion for public health, evidence informed practice, and health equity. As a Master of Science in Nursing candidate and a nurse practicing in the field of public health emergency management, Katrina seeks to better understand how local public health units can reduce and prevent health inequities experienced during emergencies.

Denise Hébert MSc, RN
Program Manager, Emergency Management
Health Protection Service Area
Ottawa Public Health

Denise Hébert is a Public Health practitioner experienced in management and supervision, program planning, implementation, and evaluation. She holds a Bachelor of Science in Nursing from Laurentian University and a Master of Science Southern Connecticut State University. Her clinical area of practice is intervention with families experiencing complex psychosocial challenges, and perinatal and early childhood mental health.

Ms. Hébert joined Ottawa Public Health over 25 years ago as a Clinical Nurse Specialist, focusing on education, research, practice, consultation, leadership. Within this organization, she has chaired the Nursing Council, and has held a joint appointment at the University of Ottawa, School of Nursing. She also contributed as a member of the Registered Nurses of Association of Ontario expert panel for the Best Practice Guideline on Assessment and Interventions for Perinatal Depression.

She has held leadership roles in public health, managing the Healthy Babies, Healthy Children, Emergency Management, and the COVID Case and Contact Management programs.

Chantal Backman INF./RN, MHA, PhD

Professeure agrégée / Associate Professor

École des sciences infirmières / School of Nursing

Faculté des sciences de la santé / Faculty of Health Sciences

Université d'Ottawa / University of Ottawa

Chantal Backman RN, MHA, PhD is an Associate Professor in the School of Nursing, Faculty of Health Sciences, University of Ottawa, an Affiliate Investigator in the Clinical Epidemiology Program of The Ottawa Hospital Research Institute, and an Affiliate Investigator in the Care of the Elderly program at Bruyère Research Institute. She completed her PhD from the University of Alberta in 2011.

Prior to joining the faculty, Professor Backman held various positions at The Ottawa Hospital in the departments of Quality and Patient Experience, Performance Measurement and Nursing Professional Practice, where she was involved in a variety of quality improvement and strategic planning activities; including the oversight of the accreditation processes, the patient safety incident management system and the development of various patient experience initiatives such as the Post-Discharge Phone Call Program and the Patient and Family Advisory Council.

Professor Backman's research program is focused on improving the quality, safety, and experience of older adults as they navigate through the healthcare system. It covers topics related to older adults in acute care, geriatric rehabilitation and long-term care settings. The specific areas include: 1) quality and safety interventions for older adults; 2) safe people-centered care transitions between settings; and 3) sense-sensitive practices for residents living in long-term care communities. She is also a co-investigator on several research grants and has been an invited lecturer nationally and internationally.

J. Craig Phillips, PhD, LLM, RN, ACRN, FAAN, FCAN

Professor of Nursing

Faculty of Health Sciences, School of Nursing

University of Ottawa

J. Craig Phillips is professor of nursing, Faculty of Health Sciences, University of Ottawa. He strives toward human rights-based and decolonizing approaches to governance and community integrated research and nursing practices. His program of research, titled the *ecosocial context of health as a human right*, has global impacts that have documented social factors influencing nursing practices and health outcomes with and among marginalized populations, primarily persons with HIV, in Botswana, Canada, Nigeria, and the United States.

He holds an LLM in intercultural human rights law and BSN, MSN, and PhD in nursing. His nursing and human rights legal training and experiences have guided his practices as a nurse, nurse educator, researcher, and administrator for nearly 30 years. He has worked in acute care and community-based clinical environments.

He is a Fellow in the American Academy of Nursing (FAAN); Fellow in the Canadian Academy of Nursing (FCAN); Past-president of the Canadian association of Nurses in AIDS Care (CANAC); Co-Director of the International Nursing Network for HIV Research; Human Rights Crosscutter Theme lead in the Centre for Health Law Policy and Ethics (CHLPE) at the University of Ottawa; and an Investigator in the Centre for Research on Health and Nursing, a partnership between University of Ottawa and the Canadian Nurses Association (CNA)

Appendix C: Permissions

Attention : courriel externe | external email

Hi Katrina,

Yes, you are welcome to include an image of the Health Equity Framework with a citation. When it is completed, will you send me a link to the citation of your thesis?

Thank you,

Amy

Amy Peterson, PhD | Director of Special Projects

ETR | etr.org

[Pronouns](#): She | Her | Hers

[REDACTED]



From: Katrina Coderre [REDACTED]

Sent: Friday, August 4, 2023 3:19 PM

To: Amy Peterson [REDACTED]

Subject: Requesting permission to use image of ETR Health Equity Framework

USE CAUTION - EXTERNAL EMAIL

Dear Dr. Peterson,

I am writing as a Master of Science in Nursing Student at the University of Ottawa, completing a thesis in health equity and public health emergency management.

In the chapter covering frameworks and methodology, I would like to use an image of the Health Equity Framework and am asking permission to use it for reprint as part of my master's thesis (with citation).

Please let me know if this is possible.

Thanks,

Katrina Coderre, RN, MScN(c)

Appendix D: Articles Excluded from Full Text Review

Title	Authors	Published	Journal	Notes
PREparedness, Response and SySTemic transformation (PRE-RE-SyST): a model for disability-inclusive pandemic responses and systemic disparities reduction derived from a scoping review and thematic analysis	Jesus, Tiago S.; Kamalakannan, Sureshkumar; Bhattacharjya, Sutanuka; Bogdanova, Yelena; Arango-Lasprilla, Juan Carlos; Bentley, Jacob; Landry, Michel D.; Papadimitriou, Christina	2021	Int J Equity Health	Exclusion reason: No Intervention
Policy and behavioral response to shock events: An agent-based model of the effectiveness and equity of policy design	Shastry, Vivek; Reeves, D. Cale; Willems, Nicholas; Rai, Varun	2022	PloS one	Exclusion reason: No Intervention;
Working with Disaster-Affected Communities to Envision Healthier Futures: A Trauma-Informed Approach to Post-Disaster	Rosenberg, Heather; Errett, Nicole A.; Eisenman, David P.	2022	International journal of environmental research and public health	Exclusion reason: Commentary;
The impact of broadening COVID-19 testing eligibility on communities of color - A lesson for overcoming structural barriers to health care	Perez, N. P.; Xerras, D. C.; Aldrich, L. S.; Wilkie, S.; Tan-McGrory, A.; Betancourt, J. R.; Masiakos, P. T.	2022	Preventive Medicine Reports	Exclusion reason: Wrong setting;
Attitudes toward vaccines during the COVID-19 pandemic: results from HBCU students	Moye, Richard; Skipper, Antonius; Towns, Tangela; Rose, Daniel	2022	AIMS public health	Exclusion reason: No Intervention;

Readability of Korean-Language COVID-19 Information from the South Korean National COVID-19 Portal Intended for the General Public: Cross-sectional Infodemiology Study	Moon, Hana; Lee, Geon Ho; Cho, Yoon Jeong	2022	JMIR formative research	Exclusion reason: No Intervention;
Multi-level policy responses to tackle socioeconomic inequalities in the incidence of COVID-19 in a European urban area	Malmusi, Davide; Paserin, M. Isabel; Mari-Dell'Olmo, Marc; Artazcoz, Lucia; Diez, Elia; Tolosa, Sara;	2022	International journal for equity in health	Exclusion reason: No Intervention;
Association of parental dissatisfaction and perceived inequality of post-disaster recovery process with child mental health	Koyama, Yuna; Fujiwara, Takeo; Yagi, Junko; Mashiko, Hirobumi; Great East Japan Earthquake Follow-up for Children study, team	2022	Social science & medicine (1982)	Exclusion reason: No Intervention;
Health-related quality of life among older adults who experienced the Pohang earthquake in South Korea:	Kim, E. M.; Kim, G. S.; Kim, H.; Park, C. G.; Lee, O.; Pfefferbaum, B.	2022	Health and Quality of Life Outcomes	Exclusion reason: No Intervention;
COVID-19 Prevention Measures Targeting Homeless People in Japan: A Cross-sectional	Fujii, Kashiko	2022	Social work in public health	Exclusion reason: No Intervention;
The Mental Health Impacts of Successive Disasters: Examining the Roles of Individual and Community Resilience Following a Tornado and COVID-19	First, Jennifer M.; Houston, J. Brian	2022	Clinical social work journal	Exclusion reason: No Intervention;

Assessing the Emergency Response Role of Community-Based Organizations (CBOs) Serving People with Disabilities and Older Adults in Puerto Rico Post-Hurricane Maria and during the COVID-19	Engelman, A.; Guzzardo, M. T.; Muniz, M. A.; Arenas, L.; Gomez, A.	2022	International Journal of Environmental Research and Public Health	Exclusion reason: Focus on providers;
Community Resilience: A Dynamic Model for Public Health 3.0	Ellis, Wendy; Dietz, William H.; Chen, Kuan-Lung	2022	Journal of Public Health Management & Practice	Exclusion reason: No Intervention;
Health service utilisation and access for people who inject drugs during COVID-19	Efunnuga, Henrietta; Higgs, Peter; Walker, Shelley; O'Keefe, Daniel	2022	Drug and alcohol review	Exclusion reason: No Intervention;
Epidemics and local governments in struggling nations: COVID-19 in Lebanon	Al-Mulki, Jida M.; Hassoun, Mahmoud H.; Adib, Salim M.	2022	PloS one	Exclusion reason: Focus on providers;
Panic and Trust during COVID-19: A Cross-Sectional Study on Immigrants in South Korea	Yoon, Myeong Sook; Feyissa, Israel Fisseha; Suk, So-Won	2021	Healthcare (Basel, Switzerland)	Exclusion reason: No Intervention;
Walking distance for vulnerable populations to public health emergency response points of dispensing in New York City	Whittemore, Kate; Ali, Mustafa; Schroeder, Andrew; Vora, Neil M.; Starr, David; Daskalakis, Demetre; Lucero, David E.	2021	Journal of emergency management (Weston, Mass.)	Exclusion reason: No Intervention;
Response strategies for promoting gender equality in public health emergencies: A rapid scoping review	Steinert, J. I.; Alacevich, C.; Steele, B.; Hennegan, J.; Yakubovich, A. R.	2021	BMJ Open	Exclusion reason: Wrong setting;

Using geographic information systems to inform the public health response to COVID-19 and structural racism: The role of place-	Siegal, Rachel; Cooper, Haley; Capers, Tiffany; Kilmer, Ryan P.; Cook, James R.; Garo, Laurie	2021	Journal of community psychology	Exclusion reason: No Intervention;
Disaster management of the psychological impact of the COVID-19	Sheek-Hussein, M.; Abu-Zidan, F. M.; Stip, E.	2021	International Journal of Emergency Medicine	Exclusion reason: No Intervention;
Mental Health and COVID-19: Policies, Guidelines, and Initiatives from the Asia-Pacific Region	Samy, Alexander Lourdes; Awang Bono, Suzanna; Tan, Shu Leed; Low,	2021	Asia-Pacific Journal of Public Health	Exclusion reason: No Intervention;
Homelessness during COVID-19: challenges, responses, and lessons learned from homeless service providers in Tippecanoe County,	Rodriguez, Natalia M.; Lahey, Alexa M.; MacNeill, Justin J.; Martinez, Rebecca G.; Teo, Nina E.; Ruiz,	2021	BMC public health	Exclusion reason: No Intervention;
North-eastern Nigeria: assessing the response capacity of National Emergency Management Agency to the plights of internally displaced	Raji, Shittu; Adekayaoja, Folashade Arinola; Agaku, Emmanuel Ayila; Akujobi, James; Hamzat, Ade Ayinde	2021	Heliyon	Exclusion reason: Focus on providers;
Engaging Community Leaders in Sharing Local Knowledge for Emergency Preparedness to Leverage Communication and Trusted Assets for Vulnerable	Piltch-Loeb, Rachael; Bernard, Dottie; Quinones Vallejo, Beatriz; Harriman, Nigel; Savoia, Elena	2021	Disaster medicine and public health preparedness	Exclusion reason: Focus on providers;

Elevating mental health disparities and building psychosocial resilience among BIPOC children and youth to broaden the climate and health	Patel, Surili Sutaria; Robb, Katherine; Pluff, C.; Maldonado, Evelyn; Tatar, Grace	2021	Journal of Applied Research on Children	Exclusion reason: No Intervention;
Climate anomalies and childhood growth in Peru	Nicholas, Khristopher; Campbell, Leah; Paul, Emily; Skeltis,	2021	Population and environment	Exclusion reason: Not Health Equity Specific;
Assessing the cascading impacts of natural disasters in a multi-layer behavioral	Naqvi, Asjad; Monasterolo, Irene	2021	Scientific reports	Exclusion reason: No Intervention;
Main factors affecting the readiness and responsiveness of healthcare systems during epidemic crises: A scoping review on cases of sars, mers, and covid-19	Mohammadpour, M.; Zarifinezhad, E.; Ghanbarzadegan, A.; Naderimanesh, K.; Shaarbafchizadeh, N.; Bastani, P.	2021	Iranian Journal of Medical Sciences	Exclusion reason: Focus on providers;
The influence of the urban environment on mental health during the covid-19 pandemic: Focus on air pollution and migration-a narrative review	Menculini, G.; Bernardini, F.; Attademo, L.; Balducci, P. M.; Sciarma, T.; Moretti, P.; Tortorella, A.	2021	International Journal of Environmental Research and Public Health	Exclusion reason: Not Health Equity Specific;
Social vulnerability indicators for flooding in aotearoa New Zealand	Mason, K.; Lindberg, K.; Haenfling, C.; Schori, A.;	2021	International Journal of Environmental Research and Public Health	Exclusion reason: No Intervention;

The Role of Social Determinants in Mental Health and Resilience After Disasters: Implications for Public Health Policy	Mao, Wanying; Agyapong, Vincent I. O.	2021	Frontiers in public health	Exclusion reason: No Intervention;
COVID-19 Lockdown and Social Capital Changes Among Youths in	Luo, Miyang; Zhang, Dong; Shen, Pengyue; Yin, Yun;	2021	International journal of health policy and management	Exclusion reason: No Intervention;
Contested solidarity and vulnerability in social media -based public responses to COVID-19 policies of mobility restrictions in Singapore: a qualitative analysis	Ligo, Val Alvern Cueco; Chang, Cheng Mun; Yi, Huso	2021	BMC public health	Exclusion reason: No Intervention;
COVID-19: A Vaccine Priority Index Mapping Tool for Rapidly Assessing Priority Populations in North Carolina	Kearney, Gregory D.; Jones, Katherine; Park, Yoo Min; Howard, Rob; Hylock, Ray; Wall, Bennett; Clay, Maria;	2021	Online journal of public health informatics	Exclusion reason: No Intervention;
Social Cohesion and Community Resilience During COVID-19 and Pandemics: A Rapid Scoping Review to Inform the United Nations Research Roadmap for COVID-19 Recovery	Jewett, Rae L.; Mah, Sarah M.; Howell, Nicholas; Larsen, Mandi M.	2021	International journal of health services : planning, administration, evaluation	Exclusion reason: No Intervention;
Toward More Effective Public Health Interventions during the COVID-19 Pandemic: Suggesting Audience Segmentation Based on Social and Media	Ihm, Jennifer; Lee, Chul-Joo	2021	Health communication	Exclusion reason: No Intervention;

'Stay at home ...': exploring the impact of the COVID-19 public health response on sexual behaviour and health service use among men who have sex with men: findings from a large online survey in the UK	Howarth, Alison R.; Saunders, John; Reid, David; Kelly, Isabelle; Wayal, Sonali; Weatherburn, Peter; Hughes, Gwenda; Mercer, Catherine H.	2021	Sexually transmitted infections	Exclusion reason: No Intervention;
Disaster Preparedness of Persons Requiring Special Care Ages 75 Years and Older Living in Areas at High Risk of Earthquake Disasters: A Cross-Sectional Study From the Pacific Coast Region of Western Japan	Hattori, Yuka; Isowa, Tokiko; Hiramatsu, Mayuko; Kitagawa, Akiko; Tsujikawa, Mayumi	2021	Disaster medicine and public health preparedness	Exclusion reason: No Intervention;
Leveraging built environment interventions to equitably promote health during and after COVID-19 in Toronto, Canada	Hassen, Nadha	2021	Health promotion international	Exclusion reason: Commentary;
Understanding the influence of contextual factors and individual social capital on American public mask wearing in response to COVID-19	Hao, Feng; Shao, Wanyun; Huang, Weiwei	2021	Health & place	Exclusion reason: Not Health Equity Specific;
The Role of a Resilient Information Infrastructure in COVID-19 Vaccine Uptake in Ontario	Duchen, Raquel; Iskander, Carina; Chung, Hannah; Paterson, J. Michael; Kwong, Jeffrey C.;	2021	Healthcare quarterly (Toronto, Ont.)	Exclusion reason: Commentary;
Understanding Infrastructure Resilience, Social Equity, and Their Interrelationships: Exploratory Study Using Social Media Data in Hurricane	Dhakal, Sunil; Zhang, Lu; Lv, Xuan	2021	Natural Hazards Review	Exclusion reason: No Intervention;

Reducing Inequities During the COVID-19 Pandemic: A Rapid Review and Synthesis of Public Health Recommendations	Brown, Chloe; Wilkins, Katie; Craig-Neil, Amy; Upshaw, Tara; Pinto, Andrew David	2021	Public health reviews	Exclusion reason: No Intervention;
Institutional Distrust among African Americans and Building Trustworthiness in the COVID-19 Response: Implications for Ethical	Best, Alicia L.; Fletcher, Faith E.; Kadono, Mika; Warren, Rueben C.	2021	Journal of health care for the poor and underserved	Exclusion reason: Commentary;
Role of social capital in disaster risk management: a theoretical perspective in special reference to Odisha, India	Behera, J. K.	2021	International journal of environmental science and technology : IJEST	Exclusion reason: No Intervention;
Creating Community During COVID-19: A Virtual Art Gallery to Address Social Isolation During a	Baumann, Sara E.; Burke, Jessica G.	2021	Health promotion practice	Exclusion reason: Commentary;
Chronically unprepared: emergency preparedness status among US medically	Barbato, David; Bryie, Lindsey; Carlisle, Carolina Maria; Doroodchi, Padydeh; Dowbiggin,	2021	Zeitschrift fur Gesundheitswissenschaften = Journal of public health	Exclusion reason: No Intervention;
Integrating international linguistic minorities in emergency planning at institutions of higher	Abukhalaf, Amer Hamad Issa; von Meding, Jason	2021	Natural hazards (Dordrecht, Netherlands)	Exclusion reason: No Intervention;
Applying an Innovative Model of Disaster Resilience at the Neighborhood Level: The COPEWELL New York City Experience	Slemp, C. C.; Sisco, S.; Jean, M. C.; Ahmed, M. S.; Kanarek, N. F.; Eros-Sarnyai, M.; Gonzalez, I. A.; Igusa, T.; Lane, K.; Tirado,	2020	Public Health Reports	Exclusion reason: No Intervention;

Giving a voice to medically vulnerable populations: A mixed-methods investigation of their unique perceptions and needs in emergency	Shapira, Stav; Aharonson-Daniel, Limor; Clarfield, A. Mark; Feder-Bubis, Paula	2020	Health & social care in the community	Exclusion reason: No Intervention;
Assessing community vulnerability to floods and hurricanes along the Gulf Coast of the United States	Shao, Wanyun; Jackson, Nida Pino; Ha, Hoehun; Winemiller, Terence	2020	Disasters	Exclusion reason: No Intervention;
Disasters, children and the kidneys	Sever, M. S.; Sever, L.; Vanholder, R.	2020	Pediatric Nephrology	Exclusion reason: Commentary;
Collaborating network in managing post the Mount Merapi's disruption, Indonesia	Pratama, Prawira Yudha; Nurmandi, Achmad	2020	Jamba (Potchefstroom, South Africa)	Exclusion reason: No Intervention;
Neighbourhood climate resilience: lessons from the	Murray, Sheila; Poland, Blake	2020	Canadian journal of public health = Revue canadienne de sante publique	Exclusion reason: Commentary;
Individual emergency-preparedness efforts: A social justice perspective	McNeill, C. C.; Richie, C.; Alfred, D.	2020	Nursing ethics	Exclusion reason: No Intervention;
Short-Term Solutions to a Long-Term Challenge: Rethinking Disaster Recovery Planning to Reduce Vulnerabilities and	Finucane, Melissa L.; Acosta, Joie; Wicker, Amanda; Whipkey, Katie	2020	International journal of environmental research and public health	Exclusion reason: No Intervention;
Europe's Covid-19 outliers: German, Austrian and Swiss policy responses during the early stages of the 2020 pandemic	Desson, Z.; Lambertz, L.; Peters, J. W.; Falkenbach, M.; Kauer, L.	2020	Health Policy and Technology	Exclusion reason: No Intervention;
Health-Care Services as a Platform for Building Community Resilience among Minority Communities: An Israeli Pilot Study	Cohen, Odeya; Mahagna, Alaa; Shamia, Asmaa; Slobodin, Ortal	2020	International journal of environmental research and public health	Exclusion reason: Focus on providers;

Emergency Preparedness and Risk Communication Among African American Churches: Leveraging a Community-Based Participatory Research Partnership COVID-19	Brewer, LaPrincess C.; Asiedu, Gladys B.; Jones, Clarence; Richard, Monisha; Erickson, Jamia; Weis, Jennifer; Abbenyi, Adeline; Brockman, Tabettha A.; Sia, Irene G.;	2020	Preventing chronic disease	Exclusion reason: Commentary;
HGBEnviroScreen: Enabling Community Action through Data Integration in the Houston-Galveston-Brazoria Region	Bhandari, Sharmila; Lewis, P. Grace Tee; Craft, Elena; Marvel, Skylar W.; Reif, David M.; Chiu, Weihsueh A.	2020	International journal of environmental research and public health	Exclusion reason: No Intervention;
Planning of a health emergency disaster risk management programme for a chinese ethnic minority community	Tam, G.; Chan, E. Y. Y.; Liu, S.	2019	International Journal of Environmental Research and Public Health	Exclusion reason: No Intervention;
The COPEWELL Rubric: A Self-Assessment Toolkit to Strengthen Community Resilience to Disasters	Schoch-Spana, Monica; Gill, Kimberly; Hosangadi, Divya; Slemper, Cathy; Burhans, Robert;	2019	International journal of environmental research and public health	Exclusion reason: Wrong outcomes;
A Review of the Literature on Community Resilience and Disaster Recovery	Mayer, Brian	2019	Current environmental health reports	Exclusion reason: Commentary;
Disability and disasters: the role of self-efficacy in emergency	Marceron, Jennifer E.; Rohrbeck, Cynthia A.	2019	Psychology, health & medicine	Exclusion reason: No Intervention;
The association between social cohesion and community disaster resilience: A cross-sectional study	Ludin, Salizar M.; Rohaizat, Munirah; Arbon, Paul	2019	Health & social care in the community	Exclusion reason: No Intervention;
Social capital and disasters: How does social capital shape post-disaster conditions in the	Jovita, Hazel D.; Nashir, Haedar; Mutiarin, Dyah; Moner, Yasmira; Nurmandi, Achmad	2019	Journal of Human Behavior in the Social Environment	Exclusion reason: No Intervention;

Minigrants to Local Health Departments: An Opportunity to Promote Climate Change Preparedness	Grossman, Elena; Hathaway, Michelle; Bush, Kathleen F.; Cahillane, Matthew; English, Dorette Q.; Holmes, Tisha; Moran, Colleen E.;	2019	Journal of Public Health Management & Practice	Exclusion reason: Wrong intervention;
Evaluation of an Online Educational Intervention to Increase Knowledge and Self-efficacy in Disaster Responders and Critical Care Transporters Caring for Individuals with Developmental	Edinger, Zachariah S.; Powers, Kelly A.; Jordan, Kathleen S.; Callaway, David W.	2019	Disaster medicine and public health preparedness	Exclusion reason: Focus on providers;
Nothing about us, without us: An inclusive preparedness programme for the whole community from inception to sustainment	Black, K.; Draper, P.	2019	Journal of business continuity & emergency planning	Exclusion reason: Commentary;
Diversity in emergency management scholarship	Bennett, DeeDee M.	2019	Journal of emergency management (Weston, Mass.)	Exclusion reason: Wrong intervention;
Community Advantage and Individual Self-Efficacy Promote Disaster Preparedness: A Multilevel Model among Persons with Disabilities	Adams, Rachel M.; Eisenman, David P.; Glik, Deborah	2019	International journal of environmental research and public health	Exclusion reason: No Intervention;
An integrated approach to mental health and disaster preparedness: a cluster comparison with earthquake	Welton-Mitchell, Courtney; James, Leah Emily; Khanal, Shree Niwas; James, Alexander Scott	2018	BMC psychiatry	Exclusion reason: Not Health Equity Specific;
Analysis of the effects of high-fidelity simulation on nursing students' perceptions of their preparedness for disasters	Unver, Vesile; Basak, Tulay; Tastan, Sevinc; Kok, Gulsah; Guvenc, Gulden; Demirtas, Ayla; Ayhan, Hatice; Kose,	2018	International emergency nursing	Exclusion reason: Focus on providers;

Household Preparedness and Preferred Communication Channels in Public Health Emergencies: A Cross-Sectional Survey of Residents in an Asian Developed	Tam, Greta; Huang, Zhe; Chan, Emily Ying Yang	2018	International journal of environmental research and public health	Exclusion reason: No Intervention;
Enhancing Disaster Resilience by Reducing Stress-Associated Health Impacts	Sandifer, Paul A.; Walker, Ann Hayward	2018	Frontiers in public health	Exclusion reason: No Intervention;
Reducing the future risk of trauma: On the integration of global disaster policy within specific health domains and established fields of	Reifels, L.	2018	International Journal of Environmental Research and Public Health	Exclusion reason: Focus on providers;
Taiwan's Annual Seasonal Influenza Mass Vaccination Program--Lessons for Pandemic Planning	Meyer, Diane; Shearer, Matthew P.; Chih, Yi-Chien; Hsu, Yu-Chen; Lin, Yung-Ching; Nuzzo,	2018	American Journal of Public Health	Exclusion reason: Commentary;
Living with disasters: social capital for disaster governance	Melo Zurita, Maria de Lourdes; Cook, Brian; Thomsen, Dana C.; Munro, Paul	2018	Disasters	Exclusion reason: Focus on providers;
Community Response and Engagement During Extreme Water Events in Saskatchewan, Canada and Queensland,	McMartin, Dena W.; Sammel, Alison J.; Arbuthnott, Katherine	2018	Environmental management	Exclusion reason: Not Health Equity Specific;
Digital disparities and vulnerability: mobile phone use, information behaviour, and disaster preparedness	Lai, C. H.; Chib, A.; Ling, R.	2018	Disasters	Exclusion reason: Not Health Equity Specific;

Social Capital Enhanced Disaster Preparedness and Health Consultations after the 2011 Great East Japan Earthquake and Nuclear Power	Hasegawa, Makoto; Murakami, Michio; Takebayashi, Yoshitake; Suzuki, Satoshi; Ohto, Hitoshi	2018	International journal of environmental research and public health	Exclusion reason: No Intervention;
Disaster-related communication preferences of homeless and nonhomeless VA patients	Gable, A. R.; Der-Martirosian, C.; Pinnock, L. N.; Dobalian, A.	2018	Journal of emergency management (Weston, Mass.)	Exclusion reason: No Intervention;
Ethnicity, income, and disaster preparedness in Deep South Texas, United States	Donner, W. R.; Lavariega-Montforti, J.	2018	Disasters	Exclusion reason: No Intervention;
Safety Needs of People With Disabilities During	Aryankhesal, A.; Pakjouei, S.; Kamali, M.	2018	Disaster medicine and public health preparedness	Exclusion reason: No Intervention;
Risk Perception and Disaster Preparedness in Immigrants and Canadian-Born Adults: Analysis of a National Survey on Similarities and Differences	Yong, An Gie; Lemyre, Louise; Pinsent, Celine; Krewski, Daniel	2017	Risk analysis : an official publication of the Society for Risk Analysis	Exclusion reason: No Intervention;
Community Emergency Response Team (CERT) Training of High-Risk Teens in the Community of Watts, South Los	Ossey, Shamika; Sylvers, Sharon; Oksuzyan, Sona; Smith, Lisa V.; Frye, Douglas; Family, Leila; Scott, Jannah;	2017	Disaster medicine and public health preparedness	Exclusion reason: Commentary;
The relationship between social capital and potential resilience in	Hahn, Daniel; Willis, Tierra L.; Christie, A. Ruthie; Mathews, Samuel R.	2017	Journal of emergency management (Weston, Mass.)	Exclusion reason: No Intervention;
Psychosocial Influences on Disaster Preparedness in San Francisco Recipients of Home Care	Gershon, R. R.; Portacolone, E.; Nwankwo, E. M.; Zhi, Q.; Qureshi, K. A.; Raveis, V. H.	2017	Journal of urban health : bulletin of the New York Academy of Medicine	Exclusion reason: No Intervention;
Disability integration throughout the disaster cycle of prepare, respond and	Casey-Lockyer, M.; Myers, S.	2017	Journal of business continuity & emergency planning	Exclusion reason: Commentary;

Mapping displaced populations with reference to social vulnerabilities for post-disaster public health management	Ahmad, Junaid; Ahmad, Anees; Ahmad, Mokbul Morshed; Ahmad, Nafees	2017	Geospatial health	Exclusion reason: No Intervention;
Qualitative Assessment of a Novel Efficacy-Focused Training Intervention for Public Health Workers in Disaster	Tower, Craig; Altman, Brian A.; Strauss-Riggs, Kandra; Iversen, Annelise; Garrity, Stephanie;	2016	Disaster medicine and public health preparedness	Exclusion reason: Focus on providers;
Barriers to the long-term recovery of individuals with disabilities following a disaster	Stough, Laura M.; Sharp, Amy N.; Resch, J. Aaron; Decker, Curt; Wilker, Nachama	2016	Disasters	Exclusion reason: No Intervention;
Key Aspects of Providing Healthcare Services in Disaster	Pourhosseini, Samira Sadat; Ardalan, Ali; Mehrolhassani,	2015	Iranian Journal of Public Health	Exclusion reason: Not Health Equity Specific;
Preparedness Perceptions, Sociodemographic Characteristics, and Level of Household Preparedness for Public Health Emergencies: Behavioral Risk Factor Surveillance System,	DeBastiani, S. D.; Strine, T. W.; Vagi, S. J.; Barnett, D. J.; Kahn, E. B.	2015	Health security	Exclusion reason: No Intervention;
No Pet or Their Person Left Behind: Increasing the Disaster Resilience of Vulnerable Groups through Animal Attachment, Activities and Networks	Thompson, Kirrilly; Every, Danielle; Rainbird, Sophia; Cornell, Victoria; Smith, Bradley; Trigg, Joshua	2014	Animals : an open access journal from MDPI	Exclusion reason: Wrong intervention;
Use of social media during public emergencies by people with disabilities	Morris, John T.; Mueller, James L.; Jones, Michael L.	2014	The western journal of emergency medicine	Exclusion reason: No Intervention;

Community-based preparedness programmes and the 2009 Australian bushfires: policy implications derived from applying theory	MacDougall, Colin; Gibbs, Lisa; Clark, Rachel	2014	Disasters	Exclusion reason: No Intervention;
Media use and communication inequalities in a public health emergency: a case study of 2009-2010 pandemic influenza A virus	Lin, Leesa; Jung, Minsoo; McCloud, Rachel F.; Viswanath, Kasisomayajula	2014	Public health reports (Washington, D.C. : 1974)	Exclusion reason: No Intervention;
An intervention for enhancing public health crisis response willingness among local health department workers: a qualitative programmatic analysis	Harrison, Krista L.; Errett, Nicole A.; Rutkow, Lainie; Thompson, Carol B.; Anderson, Marilyn K.; Ferrell, Justin L.; Freiheit, Jennifer M.; Hudson, Robert; Koch, Michelle M.;	2014	American journal of disaster medicine	Exclusion reason: Focus on providers;
Availability and Readability of Emergency Preparedness Materials for Deaf and Hard-of-Hearing and Older Adult Populations: Issues	Neuhauser, L.; Ivey, S. L.; Huang, D.; Engelman, A.; Tseng, W.; Dahrouge, D.; Gurung, S.; Kealey, M.	2013	PLoS ONE	Exclusion reason: Focus on providers;
Disparity in disaster preparedness between racial/ethnic groups	Bethel, Jeffrey W.; Burke, Sloane C.; Britt, Amber F.	2013	Disaster health	Exclusion reason: Wrong intervention;
Disaster preparedness of linguistically isolated populations: practical issues for	Nepal, Vishnu; Banerjee, Deborah; Perry, Mark; Scott, Deborah	2012	Health promotion practice	Exclusion reason: No Intervention;