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Integrating Social Determinants of Health into Australian Disaster Inquiry Recommendations Current Practice and Future Policy Directions

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Abstract

Introduction: This research evaluated Australian governmental disaster inquiries to identify evidence of application of the social determinants of health within their recommendations. **Methods:** An analysis was conducted of recommendations from published Australian disaster inquiry reports between 2007 and 2020 against the Social Determinants of Health framework's three overarching principles of action as described by the Commission on Social Determinants of Health, 2005-2008.

Results: Between 2007 and 2020, eight disaster inquiries were conducted, yielding 612 recommendations. Of these reports, 120 recommendations (19.6%) showed alignment with the social determinants of health principles of action. Of these, 48 recommendations (7.8%) demonstrated action on overarching recommendation "Improve daily living conditions"; 59 recommendations (9.6%) demonstrated action on overarching recommendation "Tackle the inequitable distribution of power, money, and resources"; and 13 recommendations (2.1%) demonstrated action on overarching recommendation "Measure and understand the problem and assess the impact of action."

Conclusions: This low alignment underscores a critical gap in current Australian disaster inquiry practices, which historically prioritize emergency management and response over holistic health outcomes. There are opportunities to examine what roles the social environment and public health practice have in shaping disaster management policy and practice in ways that are conducive to strengthening more healthy, resilient societies.

Introduction

Australian government inquiries and their respective reports are a feature of Australia's approach to evaluating and making recommendations to improve the performance of emergency management systems. Contemporary knowledge of the impacts of disasters and their causal factors has evolved beyond the event-based focus of traditional emergency management practices to a risk-based approach that encourages broader understanding and identification of risks associated with disasters. This approach has been further refined by the World Health Organization (WHO) with the development and implementation of the Health Emergency Disaster Risk Management (HEDRM) framework. Nevertheless, while people's health is recognized as a key factor in determining the risks and outcomes of disaster events for individuals and communities, inquiries conducted in response to such events lack a deeper investigation into the health status of the communities affected. Common ground lies in understanding how determinants of health are related to the risk factors of disasters. A focus on both social determinants and on people's health would bolster action aimed at reducing exposures and vulnerabilities, enabling communities to apply their strengths, resources, and assets; and targeting health outcomes—a key objective of disaster risk management. Actions to improve public health builds community resilience, such resilience enables people and communities to "resist, absorb, accommodate, adapt to, transform and recover from the effects of a hazard in a timely and efficient manner, including the preservation and restoration of its essential basic structures and functions."² Consideration of the social determinants of health and how they relate to the disaster risk experiences by populations or individuals' vulnerability to disaster is a novel and potentially complementary method of understanding disaster risk and resilience.

The overarching objective of this paper is to critically assess the integration of social determinants of health within Australian governmental disaster inquiry recommendations from 2007 to 2020. The aim of this research was to examine whether Australian disaster inquiries made recommendations to act on improving social determinants of health. These research findings extend beyond observation to actively contribute to policy and practice by proposing recommendations for improvement.

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The social determinants of health are defined as "the conditions in which people are born, grow, live, work and age, including the health system." They include the principles of action and action objectives as described in Table 1.4

The extent to which these determinants are addressed can lead to a diverse and dynamic range of health outcomes. When these determinants are not addressed well or without a focus on reducing inequities, there are consequences of poor health, wide inequities and disparities. Conversely, effective and equitable promotion and

support for social determinants of health can also yield higher standards of health and well-being for all. The differences in health status observed between populations are a complex web of factors that are influenced by these determinants such as the uneven distribution of wealth, power, policy and program priorities, and inequitable access to health services within and across populations. At the same time, health status is a risk factor for other social determinants, including poverty and levels of educational attainment across genders. ^{5,6} The practical implications of integrating

Table 1. Social determinants of health principles of action and action objectives [1]

Social determinants of health: Principles of action [9]	Action objectives [9]			
Improve daily living conditions	 Commit to and implement a comprehensive approach to early life, building on existing child survival program and extending interventions in early life to include social/emotional and language/cognitive development. Expand the provision and scope of education to include the principles of early child development (physica social/emotional, and language/cognitive development). Place health and health equity at the heart of urban governance and planning. Promote health equity between rural and urban areas through sustained investment in rural development addressing the exclusionary policies and processes that lead to rural poverty, landlessness, and displacemer of people from their homes. Ensure that economic and social policy responses to climate change and other environmental degradation take into account health equity. Make full and fair employment and decent work a central goal of national and international social and economic policy-making. Achieving health equity requires safe, secure, and fairly paid work, year-round work opportunities, and health work—life balance for all. Improve the working conditions for all workers to reduce their exposure to material hazards, work-related stress, and health-damaging behaviors. Establish and strengthen universal comprehensive social protection policies that support a level of income sufficient for healthy living for all. Build health care systems based on principles of equity, disease prevention, and health promotion. Build and strengthen the health workforce and expand capabilities to act on the social determinants of health 			
Tackle the inequitable distribution of power, money, and resources	 Place responsibility for action on health and health equity at the highest level of government and ensure is coherent consideration across all policies. Adopt a social determinants framework across the policy and programmatic functions of the Ministry of Health and strengthen its stewardship role in supporting a social determinants approach across government. Strengthen public finance for action on the social determinants of health. Increase international finance for health equity and coordinate increased finance through a social determinants of health action framework. Fairly allocate government resources for action on the social determinants of health. Institutionalize consideration of health and health equity impact in national and international economic agreements and policy-making. Reinforce the primary role of the state in the provision of basic services essential to health (such as water, sanitation) and the regulation of goods and services with a major impact on health (such as tobacco, alcoho and food). Address gender biases in the structures of society—in laws and their enforcement, in the way organization are run and interventions designed, and the way in which a country's economic performance is measured. Develop and finance policies and programs that close gaps in education and skills, and that support fema economic participation. Increase investment in sexual and reproductive health services and programs, building to universal coverage and rights. Empower all groups in society through fair representation in decision-making about how society operates particularly in relation to its effect on health equity, and create and maintain a socially inclusive framework for policy-making. Enable civil society to organize and act in a manner that promotes and realizes the political and social right affecting health equity. Make health equity a global development goal and adopt a social determin			
Measure and understand the problem and assess the impact of action	 Ensure that routine monitoring systems for health equity and the social determinants of health are in plac locally, nationally, and internationally. Invest in generating and sharing new evidence on the ways in which social determinants influence population health and health equity and on the effectiveness of measures to reduce health inequities through action coscial determinants. Provide training on the social determinants of health to policy actors, stakeholders, and practitioners and invest in raising public awareness. 			

social determinants of health into disaster management are profound. Such an approach would enable more targeted actions aimed at reducing exposures and vulnerabilities, thereby strengthening communities' capacities to apply their inherent strengths, resources, and assets. By addressing the root causes of vulnerability, this research aims to inform policy and practice in a way that leads to more effective and equitable disaster preparedness, response, and recovery, fostering healthier and more resilient societies.

Method

An evaluation of all Australian Government disaster inquiry recommendations between 2007 and 2020 was undertaken to determine what, if any recommendations support action on the social determinants of health utilizing the "overarching recommendations" as described by Commission on Social Determinants of Health, 2005-2008. The Social Determinants of Health are widely recognized as a framework for identification of causal drivers of health and well-being. As such they were selected as the reference standard for recommendation assessment:

- Improve daily living conditions: This principle focuses on the immediate circumstances of people's lives, including housing, food security, education, and safe environments.
- Tackle the inequitable distribution of power, money, and resources: This addresses the structural drivers of health inequities, such as macroeconomic policies, urbanization policies, and governance structures that perpetuate disparities.
- Measure and understand the problem and assess the impact of action: This emphasizes the need for robust data, a skilled workforce trained in social determinants of health, and public awareness campaigns to effectively monitor and evaluate interventions.⁴

Each recommendation from each inquiry was individually assessed to identify whether it explicitly referenced the overarching recommendation or if the recommendation intent included action objectives as described in Table 1. This dual approach allowed for the identification of both direct and indirect alignment with social determinants of health principles, providing a nuanced understanding of their integration within inquiry outcomes. The analyzed disaster inquiry recommendations included:

- Operation Recovery Task Force (7 recommendations)
- 2009 Victorian bushfires Royal Commission⁸ (67 recommendations)
- 2010-11 Flood Warnings & Response (93 recommendations)
- A Shared Responsibility. The Report of the Perth Hills Bushfire February 2011¹⁰ (55 recommendations)
- 2012 Queensland floods commission of inquiry¹¹ (189 recommendations)
- 2013 Tasmanian Bushfires Inquiry¹² (103 recommendations)
- Hazelwood Mine Fire Inquiry¹³ (18 recommendations)
- Royal Commission into National Natural Disaster Arrangements¹⁴ (80 recommendations)

Results

Between 2007 and 2020, 8 disaster inquiries were conducted with a total of 612 recommendations across the inquiries.

Of the 8 reports, only 120 of 612 recommendations (19.6%) showed alignment with the social determinants of health principles

of action. A more detailed breakdown of this alignment across the 3 overarching principles is as follows:

- Improve daily living conditions: 48 recommendations (7.8%) demonstrated action in this area.
- Tackle the inequitable distribution of power, money, and resources: This principle saw the highest number of aligned recommendations, with 59 (9.6%).
- Measure and understand the problem and assess the impact of action: Only 13 recommendations (2.1%) aligned with this principle, indicating a significant gap in the focus on evaluation and understanding of social determinants of health impacts.

A summary of recommendations per inquiry that aligned with the social determinants of health overarching principles is shown in Table 2.

Discussion

The finding that only 19.6% of recommendations from Australian disaster inquiries between 2007 and 2020 aligned with social determinants of health principles is indicative of a significant underrepresentation of these critical factors. This low proportion suggests a systemic oversight as the profound influence of social factors on disaster vulnerability, impact, and recovery would suggest a substantially higher integration of social determinants of health considerations into inquiry outcomes. This limited alignment reflects a persistent disconnect between the evolving understanding of disaster risk and the traditional focus of governmental inquiries. Historically, disaster practice in Australia has concentrated on event-based emergency management and response operations. This emphasis has often led inquiries to focus predominantly on operational failures, such as communication breakdowns, governance structures, and immediate response. Consequently, the terms of reference for these inquiries, and the expertise brought to bear, may not have explicitly mandated or deeply explored the underlying social and systemic factors that predispose certain populations to greater harm. When inquiries are primarily tasked with examining operational aspects, their recommendations naturally gravitate toward improving those operations, rather than addressing the deeper social inequities that amplify disaster impacts.

The consequence of this low integration is that disaster responses and recovery efforts, while potentially efficient in logistical terms, may remain less effective in addressing the root causes of vulnerability. This perpetuates cycles of inequity, leading to disproportionate impacts on marginalized groups and potentially hindering long-term community resilience. Such approaches represent a critical missed opportunity for policy intervention that could build more equitable and robust communities capable of withstanding future events.

Measure and Understand the Problem and Assess the Impact of Action

The inquiries varied in their scope, focus, and intent, and the extent to which community expectations have or have not been met, or calls for government accountability from both the public and the media, are factors in the commissioning of inquiries. There is limited understanding of how these inquiries promote, preserve, and improve the health status of communities that have experienced disaster impacts. Health, as defined by WHO, is the "complete state of physical, mental and social well-being." This definition identifies that health is not simply the absence of disease but the composition of multiple inputs to create a complete state of

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Table 2. Summary report of inquiry recommendations that aligned with the social determinants of health overarching recommendations

Inquiry name	Total recommendations	Recommendations aligned with social determinants of health principles (total)	Improve daily living conditions	Tackle the inequitable distribution of power, money, and resources	Measure and understand the problem and assess the impact of action
2010–11 Victorian Flood Warnings & Response	93	27	17	10	
2014 Hazelwood Mine Fire Inquiry	18	21	9	10	2
2012 Queensland Floods Commission of Enquiry	189	13	2	10	1
2009 Victorian Bushfires Royal Commission	67	7	4	2	1
Operation Recovery Task Force (Cyclone Larry 2007)	7	6		5	1
2013 Tasmanian Bushfires Inquiry	103	21	7	12	2
A Shared Responsibility: The Report of the Perth Hills Bushfire February 2011	55	12	4	8	
Royal Commission into National Natural Disaster Arrangements (2020)	80	13	5	2	6
Totals	612	120	48	59	13

well-being. This construct has been further developed as reflected in the definition of the social determinants of health as "the conditions in which people are born, grow, live, work and age, including the health system." ¹⁶ It is postulated that the differences in health status observed between populations are a result of uneven distribution of wealth, power, and/or policy that influence these determinants. Flage and Aven anticipated emerging global societal risks that have eventuated, including pandemics and infectious diseases; chronic diseases in the developed world; greater economic inequality; breakdown of critical infrastructure; rapid shifts in demographic patterns; and unsustainable world population growth. 17 The findings of this study are consistent with that policy and research focus on understanding causal factors of risk related to vulnerabilities and strengths. Further, these show the potential of social determinants of health as a useful framework to inform the terms of reference and conduct of disaster inquiries and other forms of evaluation.

A critical examination of Australia's approach to conducting governmental disaster inquiries reveals a notable absence of a single, consistent, overarching regulatory framework or standardized methodology specifically designed to evaluate the impacts of disasters. While broader frameworks exist, such as the Australian Disaster Preparedness Framework¹⁸ and the National Strategy for Disaster Resilience, 19 these primarily guide national strategies for preparedness and risk reduction rather than dictating the specific conduct and scope of inquiries themselves. For significant events, Royal Commissions, such as the Royal Commission into National Natural Disaster Arrangements, are established under specific legislative acts like the Royal Commissions Act 1902, with their own bespoke Letters Patent and terms of reference.²⁰ However, these mechanisms for major incidents do not constitute a standardized methodology applicable to all disaster inquiries or a methodology for integrating a public health lens. Notably, Australia does possess methodologies for assessing social impacts in other governmental contexts. For instance, the Social Impact Assessment Guidelines, used for state-significant projects in New South Wales

and Queensland, provide a robust framework for identifying, predicting, and evaluating the social impacts of major developments and for developing appropriate responses. ^{21–23} These guidelines demonstrate that the capacity and expertise for systematic social impact analysis exist within Australian governmental processes. Given that such methodologies are not explicitly or consistently applied to disaster inquiries themselves represents a significant opportunity. Adapting or developing similar, mandatory guidelines specifically for disaster inquiries, informed by public health principles, would provide valuable input that is currently lacking. This would enable inquiries to move beyond a purely operational focus to address the underlying social conditions that dictate disaster vulnerability and recovery.

While the focus of this study was based on Australian inquiries, international research to explore the linkage between the social determinants of health and disaster risks and impacts has also been undertaken. Biedrzycki and Koltun reviewed three case studies (Hurricane Katrina, BP oil spill, and H1N1) in relation to how impact was related to elements of the social determinants of health. Examples of economic status relative to health care behavior, where poverty was associated with low vaccination status; unemployment rates associated with the BP oil spill were associated with increased domestic violence; and minority populations associated with chronic illness and increased susceptibility to infection, all demonstrated the connection between social determinants and outcomes in disaster settings.²⁴

Tackle the Inequitable Distribution of Power, Money, and Resources

This study found that the highest number of recommendations across inquiries aligned with the overarching recommendation of "Tackle the inequitable distribution of power, money, and resources." A systematic review conducted by Nomura et al explored the intersection of disaster vulnerability and social

determinants of health and proposed action upon identified themes to improve community resilience.²⁵ Such action aligns with Nomura's research showing that the effects of disasters disproportionally affect groups with higher levels of vulnerability within communities.²⁶

Effective risk communication with communities was a feature of recommendations assessed in this study. This appeared to be associated with recommendations related to communication between government agencies and communities, their roles in engaging communities in disaster risk management (in particular, preparedness and response actions), and evaluating the roles, functions, and decision-making powers of government leadership and agencies. These recommendations also support previous findings that maintaining trust and mitigating fracturing of communities during and after disasters is achieved by timely, factual communication from leadership.^{27,28} These findings are consistent with Norris and Stevens, who describe communication as a key element of communities' adaptive capacities to risks posed by disasters.²⁵

Marginalized populations due to income levels, gender, age, disability, ethnicity, religion, or sexual orientation are at greater risk from the impact of a disaster. ^{26,29} Twigg reported that marginalized and disadvantaged groups suffer the worst from disasters. ³⁰ Those who are already at social or economic disadvantage are less able to undertake risk reduction measures, are at greater risk of experiencing disproportionate effects, and face greater challenges to recover. Such vulnerability, associated with underlying social and economic status, is described as the "the human dimension of disasters," resulting from physical, social, economic, and environmental factors, which are also drivers of poor health. ^{16,30} This finding is consistent with Rodriguez-Llanes et al's research, which identified lack of social support, female gender, prior traumas, resource loss, human loss, and poor physical or mental health as likely indicators of psychological resilience to disasters. ³¹

Improve Daily Living Conditions

Poverty has been found to be a key driver and consequence of disasters, and those suffering poverty will remain so or worse following a disaster.³² The unequal distribution of wealth and the increased vulnerability to adverse impacts of disasters have been identified by Naser-Hall, who advocates for poverty reduction pre-impact to mitigate disaster effect.³³ Research conducted by Winsemius et al. also reported that people experiencing poverty are disproportionally exposed to natural disasters caused by floods and droughts.³⁴ Lindsay provided an analysis of the determinants of disaster vulnerability, finding that "income and social status are the pivotal factors in determining disaster vulnerability," and recommends "Britton and Walkers typology of vulnerability."35 Plough et al. make the connection between those communities that experience disparities during non-emergency times and the need to build resilience, which in turn can strengthen a community's ability to rally from disasters. ³⁶ Some of these impacts may be buffered by local community support and social connectedness, which have been previously explored by Lacoviello et al in reference to the impacts of disaster. Their findings showed that supportive social networks increase an individual's resilience, and, importantly, enhancement of them pre-disaster impact had a positive effect on mitigating psychological trauma post-event. Findings of land scarcity as possible drivers suggest the need for developmental policies and land use planning that protect those experiencing poverty.³⁷ Frameworks that enhance attention on the causes of socioeconomic inequities and challenges may be of use for consideration in future disaster inquiries.

Significant barriers in accessing basic needs by older persons have also been reported, which can exacerbate challenges faced by older persons in preparing and responding to disaster. Research investigating the impacts of Hurricane Katrina on this age group found differences in risks in disasters compared to the community they reside in. Identified challenges included physical and psychological health barriers and the inability to evacuate without assistance in preparation, transportation, and pet care. Turther to this, specific social determinants of health related to financial status, mental health, and their relationship to disaster impacts have also been investigated. Norris et al. found that populations with low socioeconomic status are at greater risk of mental health consequences following a disaster, due to feelings of lack of self-worth and income stress. ²⁵

Findings made by Arnold related to resilience concluded that individual characteristics of mental health and higher intelligence contribute to developmental competence. Al,42 Sameroff, however, has noted that the effects of such competencies do not overcome the effects of high environmental risk. Such findings are of value in that risk factors identified hold commonality between health and disaster risk management and present a rationale for consideration of health determinants when recommending actions to improve disaster resilience. This complements research conducted by Lindsay, who recommends aligning disaster risk management with social determinants of health planning and a population health approach. Such intent is consistent with the emphasis in the Sendai Framework for Disaster Risk Reduction on preventing the creation of new risks and reducing existing risks by addressing underlying risk drivers of all types of disasters.

This study observed variance in the investigation process between inquiries and the areas of expertise of commissioners and other investigators, an absence of clear frameworks for consistent evaluation across inquiries, including the criteria for establishing an inquiry, and inconsistent identification of the social determinants of health and recommendations related to health status across inquiries. Public health practice, as an evidence-based means of inquiry and action, can provide guidance to systematically investigate the underlying causes and impacts of disasters. Eburn's review of lessons learnt and recommendation implementation related to Australian disaster inquiries and commissions found inconsistency between reviews, a lack of clarity on whether recommendations had been implemented, and if they had, to what effect they created change. 45 Utilization of public health practice and the social determinants of health frameworks may assist in determining priority action to improve disaster risk management if applied through future inquiry processes. There are opportunities to further integrate social determinants of health in disaster risk management and to engage key actors and professions in emergency management systems in Australia, and those responsible for commissioning and conducting evaluations, including disaster inquiries, in applying public health practice.

The effectiveness of disaster inquiry recommendations is fundamentally contingent upon their implementation and evaluation. As highlighted by the 2009 Victorian Bushfires Royal Commission, a recurring challenge in Australia is that "the recommendations of previous inquiries have not always been implemented." This historical pattern of non-implementation is a critical barrier to achieving concrete improvements in disaster management and community resilience. When recommendations, particularly those that implicitly or explicitly touch upon social determinants of health, are not acted upon, the underlying social inequities that drive disaster vulnerability persist or worsen. This creates a

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detrimental feedback loop: disasters expose existing vulnerabilities, inquiries may identify and recommend addressing these, but if those recommendations are not implemented, the vulnerabilities remain. Consequently, communities, especially marginalized groups, continue to experience disproportionate impacts in subsequent disaster events. This perpetuates a cycle of harm and hinders the development of long-term resilience.

For recommendations to translate into tangible, positive change, their importance and intended impact must be clearly articulated, and robust mechanisms for tracking and enforcing their implementation must be established. Without a clear mandate and a robust system for monitoring and accountability, even well-intentioned recommendations are likely to remain aspirational rather than transformative.

There are substantial opportunities to further integrate social determinants of health into disaster risk management and to engage key actors and professions in emergency management systems in Australia. Public health practice, with its foundation in evidence-based inquiry and action, offers a powerful framework to systematically investigate the underlying causes and impacts of disasters. By applying public health principles, inquiries can move beyond superficial observations to uncover the deeper societal factors that contribute to vulnerability and influence recovery trajectories.

The utilization of social determinants of health frameworks can significantly assist in determining priority actions to improve disaster risk management. This is particularly relevant given the emphasis in the Sendai Framework for Disaster Risk Reduction on preventing the creation of new risks and reducing existing risks by addressing underlying risk drivers. Integrating social determinants of health into the terms of reference for disaster inquiries could enable a deeper understanding of the multifaceted drivers of community risk, encompassing not only hazards but also exposures, vulnerabilities, and capacities. By systematically incorporating public health expertise and social determinants of health perspectives, Australian disaster inquiries can transition from merely identifying problems to fostering comprehensive, health-equity-focused solutions that contribute to the creation of healthier, more resilient societies.

Recommendations

Based on the analysis of current practices and identified gaps, recommendations are proposed to enhance the integration of social determinants of health into Australian governmental disaster inquiries. This aims to ensure that future inquiries contribute more effectively to building resilient and equitable communities.

- Establish a clear regulatory mandate requiring all governmental disaster inquiries to explicitly include the assessment of social determinants of health as a core component of their terms of reference. This would ensure that inquiries systematically address underlying social vulnerabilities, moving beyond a sole focus on traditional emergency management operations.
- Develop a national framework for robustly tracking the implementation and impact of disaster inquiry recommendations, with a particular emphasis on those related to social determinants of health. This framework could involve regular public reporting, designated oversight bodies, and clear performance indicators.
- Develop and implement a national guideline or handbook for conducting disaster inquiries that incorporates a standardized methodology for assessing impacts and informing recommendations. This methodology could draw valuable

- lessons and adapt frameworks from existing Social Impact Assessment guidelines used for other governmental projects.
- Mandate the inclusion of public health experts, particularly those with specialized knowledge in social determinants of health and health equity, on disaster inquiry panels and investigative teams.
- Invest in comprehensive training programs for inquiry commissioners, investigative staff, and relevant government officials on social determinants of health concepts, their direct relevance to disaster risk, and practical methodologies for assessing social impacts.

Limitations

This study was limited to Australian disaster inquiries and reviewed the recommendations only. No evaluation of implementation (or not) of the recommendations has been assessed, or to what extent implementation has contributed to better health and well-being.

This study analyzed recommendations against the social determinants of health overarching recommendations as described by the Commission on Social Determinants of Health, 2005-2008. Further analysis of the underlying action objectives of these principles may provide more detailed insights into specific determinants such as gender, age, disability, ethnicity, and access to services.

Variance in terminology definitions, for example, the term "resilience" is used with different meanings in different contexts. Application of standardized evaluation to inform the development of recommendations and the overall design and conduct of Australian disaster inquiries was not evident.

Conclusion

This study investigated the extent to which social determinants of health were evidenced within the recommendations of selected Australian disaster inquiries. Despite the recognition of specific social determinants of health, such as poverty and gender diversity, as risk factors for disasters, comprehensive review and incorporation of wider social determinants of health is yet to be fully integrated in the understanding and actions to reduce disaster risk. The analysis revealed that only 19.6% of recommendations demonstrated alignment with social determinants of health principles, highlighting a significant systemic gap in current Australian disaster inquiry practices.

A key area where this understanding of social determinants of health can be applied is in government inquiries into disasters. The social determinants of health offer a consistent public health-informed approach to guide future inquiries, ensuring identification of recommendations that support action on social drivers of risk and reinforce a focus on improving health outcomes for all, particularly marginalized groups who experience disproportionate impacts of disasters. The integration of a common and consistent approach to inquiries that utilize agreed definitions, measures, and indicators is important to achieve robust investigation, analysis, findings, and recommendations for synergistic action.

Competing interests. None.

References

- 1. Murray V. Background: Health EDRM and research. WHO guidance on research methods for health emergency and disaster risk management. 6.
- Murray V, Abrahams J, Adballah C, et al. Hazard Information Profiles: Supplement to: UNDRR-ISC. Hazard Definition & Classification Review-Technical Report. 2021.

- 3. Wilkinson RG, Marmot M. Social Determinants of Health: The Solid Facts. World Health Organization; 2003.
- 4. Health WCoSDo, World Health Organization. Closing the Gap in a Generation: Health Equity Through Action on the Social Determinants of Health: Commission on Social Determinants of Health Final Report. World Health Organization; 2008.
- Fothergill A. Gender, risk, and disaster. Int J Mass Emerg Disasters. 1996; 14(1):33–56.
- Fothergill A, Peek LA. Poverty and disasters in the United States: a review of recent sociological findings. Nat Hazards. 2004;32:89–110.
- The Final Report of the Operational Recovery Task Force: Severe Tropical Cyclone Larry (State of Queensland) (2007).
- Teague B, Pascoe S, McLeod R. The 2009 victorian bushfires royal commission final report: summary. 2010.
- Comrie N. Review of the 2010-11 Flood Warnings & Response. Victorian Government Australia; 2011.
- 10. **Keelty M.** A Shared Responsibility—The Report of the Perth Hills Bushfire February 2011 Review. Government of Western Australia; 2011.
- Inquiry QFCo. Queensland Floods Commission of Inquiry. Queensland Flood Commission of Inquiry; 2012.
- 12. **Hyde M.** 2013 *Tasmanian Bushfires Inquiry*. Department of Premier and Cabinet: 2013
- Inquiry HMF. Hazelwood Mine Fire Inquiry Report 2015/2016 Volume I— Anglesea Mine. Victorian Government Printer; 2015.
- 14. Royal Commission into National Natural Disaster Arrangements (2020).
- 15. Constitution of the World Health Organisation (2006).
- Marmot M. Social determinants of health inequalities. The Lancet. 2005; 365(9464):1099–1104. doi:10.1016/s0140-6736(05)71146-6
- 17. **Flage R**, **Aven T**. Emerging risk—conceptual definition and a relation to black swan type of events. *Reliab Eng Syst Saf*. 2015;**144**:61–67.
- National Disaster Risk Reduction Framework. 2019. https://www.homeaf fairs.gov.au/
- Governments CoA. National Strategy for Disaster Resilience. Commonwealth of Australia Barton; 2011.
- Australia Co. Royal Commission into National Natural Disaster Arrangements Report. Royal Commission into National Natural Disaster Arrangements Canberra; 2020.
- Parsons R, Everingham J-A, Kemp D. Developing social impact assessment guidelines in a pre-existing policy context. *Impact Assess Proj Apprais*. 2019;37(2):114–123.
- Franks D. Social Impact Assessment of Resource Projects. International Mining for Development Centre; 2012:3.
- Holm D, Ritchie L, Snyman K, Sunderland C. Social impact management: a review of current practice in Queensland, Australia. *Impact Assess Proj Apprais*. 2013;31(3):214–219.
- Paul AB, Raisa K. Integration of Social Determinants of Community Preparedness and Resiliency in 21st Century Emergency Management Planning. Homeland Security Affairs U6. 2012;8(1).
- Norris FH, Stevens SP. Community resilience and the principles of mass trauma intervention. *Psychiatry*. 2007;70(4):320–328.
- Marmot M, Friel S, Bell R, Houweling TA, Taylor S, Health CoSDo. Closing the gap in a generation: health equity through action on the social determinants of health. *Lancet*. 2008;372(9650):1661–1669.

- Chandra A, Williams M, Plough A, et al. Getting actionable about community resilience: the Los Angeles County Community Disaster Resilience project. *Am J Public Health*. 2013;103(7):1181–1189.
- Vernberg EM, Hambrick EP, Cho B, Hendrickson ML. Positive psychology and disaster mental health: strategies for working with children and adolescents. *J Clin Psychol.* 2016;72(12):1333–1347.
- Christoplos I, Mitchell J, Liljelund A. Re-framing risk: the changing context of disaster mitigation and preparedness. *Disasters*. Sep 2001; 25(3):185–198.
- Twigg J. Disaster Risk Reduction, Mitigation and Preparedness in Development and Emergency Programming, Good Practice Review 9. Humanitarian Practice Network (HPN), London: ODI. 2004 Mar.
- Rodriguez-Llanes JM, Vos F, Guha-Sapir D. Measuring psychological resilience to disasters: are evidence-based indicators an achievable goal? Environ Health. 2013 Dec 20;12(1):115. doi:10.1186/1476-069X-12-115
- 32. Hallegatte S, Vogt-Schilb A, Bangalore M, Rozenberg J. Unbreakable: Building the Resilience of the Poor in the Face of Natural Disasters, Climate Change and Development. The World Bank; 2017.
- 33. Naser-Hall E. The disposable class: ensuring poverty consciousness in natural disaster preparedness. *DePaul J Soc Just.* 2013;7:55.
- 34. Winsemius HC, Jongman B, Veldkamp TI et al. Disaster Risk, Climate Change, and Poverty: Assessing the Global Exposure of Poor People to Floods and Droughts. The World Bank; 2015.
- Lindsay J. The determinants of disaster vulnerability: achieving sustainable mitigation through population health. *Journal ISPMH*. 2003;28(2):291– 304. doi:10.1023/a:1022969705867
- 36. **Plough A, Fielding JE, Chandra A**, et al. Building community disaster resilience: perspectives from a large urban county department of public health. *Am J Public Health*. 2013;**103**(7):1190–1197.
- Iacoviello BM, Charney DS. Psychosocial facets of resilience: implications for preventing posttrauma psychopathology, treating trauma survivors, and enhancing community resilience. Eur J Psychotraumatol. 2014;5(1):23970.
- 38. Campbell J. Introduction applying the "disaster lens" to older adults. *Generations*. 2007;**31**(4):5–7.
- Henderson TL, Roberto KA, Kamo Y. Older adults' responses to Hurricane Katrina: daily hassles and coping strategies. *J Appl Gerontol.* 2010; 29(1):48–69.
- Rosenkoetter MM, Covan EK, Cobb BK et al. Perceptions of older adults regarding evacuation in the event of a natural disaster. PHN. 2007;24(2): 160–168.
- Arnold JL. Disaster medicine in the 21st century: future hazards, vulnerabilities, and risk. Prehospital Disaster Med. Jan-Mar 2002;17(1):3–11.
- Arnold JL. Risk and risk assessment in health emergency management. Review. Prehospital Disaster Med. May-Jun 2005;20(3):143–154.
- 43. **Sameroff AJ, Rosenblum KL**. Psychosocial constraints on the development of resilience. *Ann N Y Acad Sci.* 2006;**1094**(1):116–124. doi:10.1196/annals. 1376.010
- 44. Sendai Framework for Disaster Risk Reduction 2015-2030 (2015).
- 45. **Eburn M.** Learning lessons and implementing recommendations. *Aust J Emerg Manag.* 2024;**39**(2):41.
- 5 2009 Victorian Bushfires Royal Commission: final report (2009 Victorian Bushfires Royal Commission) (2010).