

# Priorities for Mental Health and Psychosocial Support Intervention Research in the Context of the Climate Crisis: A Modified Delphi Study

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## Abstract

The climate crisis is adversely impacting mental health and wellbeing. Research on interventions to address these impacts remains scarce, particularly in humanitarian settings. This study used a modified Delphi process to identify research priorities for mental health and psychosocial support (MHPSS) and climate crisis research, drawing on the perspectives of those with demonstrated interest, engagement, and/or expertise in MHPSS and the climate crisis. The study consisted of two online surveys. In the first survey, demographic and qualitative data were collected and analysed to generate a list of research priorities and a concept map to describe the area of climate crisis and MHPSS research. In the second survey, participants ranked and rated their agreement with priorities and provided recommendations for modification of individual priorities and the concept map. In total, 91 experts working primarily but not exclusively in MHPSS programming or practice participated in the study. Consensus was reached on 20 research priorities, and 8 top-ranked priorities were identified. Given the urgency of the climate crisis, MHPSS and climate crisis research must contribute to mitigating and adapting to the climate crisis while promoting both mental health and psychosocial wellbeing and just international development.

**Keywords:** climate change, climate crisis, mental health and psychosocial support, mental health, psychosocial wellbeing

## Key implications for practice

- Evidence is emerging of substantial impacts of the climate crisis on mental health and wellbeing, but little MHPSS and climate crisis intervention research has been conducted to date, thereby underscoring the need for identification of priorities that can inform research funding decisions to support work in this area.
- Research to understand the needs of populations experiencing climate crisis-related impacts is needed to inform context and population-specific MHPSS and climate change programming.
- Programmatic needs and resource assessments and the collection of rigorous monitoring and evaluation data along with practically focused research using diverse methodologies are needed to better elucidate how to address the needs of climate crisis-affected populations, ensuring they are placed at the centre of responses.

## Introduction

The climate crisis threatens to disproportionately impact populations that are the least responsible for contributing to its causes, including many of those living in humanitarian settings (European Union, 2021; Romanello et al., 2021). In 2019, 13 out of 20 countries most vulnerable and least ready to adapt to climate change also had inter-agency appeals for humanitarian assistance (Office for the Coordination

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of Humanitarian Affairs (OCHA), 2019). In 2021, OCHA named climate change along with conflict and coronavirus disease 2019 as the primary drivers of increased humanitarian needs, resulting in what the UN Secretary General called “the greatest humanitarian challenge since the second world war” (OCHA, 2021). The increase in severity and frequency of climate change-related extreme weather events, such as heatwaves, droughts and floods, can lead to multiple threats to physical and mental health, including loss of livelihoods, food insecurity, water scarcity and the spread of infectious diseases (Romanello et al., 2021). Climate change can also intensify conflicts due to resource shortages and exacerbation of existing tensions, which can drive displacement and force communities to migrate (UNHCR, 2021). In settings already experiencing humanitarian crises, communities are often facing multiple and overlapping risks to health and wellbeing, with additional climate shocks further eroding people’s resilience and increasing humanitarian needs (OCHA, 2019).

Several reviews have documented that climate change is associated with negative impacts on mental health and wellbeing; however, literature on interventions to address these impacts remains scarce, particularly in humanitarian settings (Charlson et al., 2021; Cianconi et al., 2020; Palinkas & Wong, 2020). Climate change-related events have been associated with psychological distress, poor mental health (particularly among those with pre-existing mental health conditions), higher mortality among people with mental health conditions and higher suicide rates (Charlson et al., 2021). The mental health and wellbeing needs of populations experiencing climate change impacts within humanitarian crises are likely to be particularly high, with an estimated one in five people living in conflict-affected settings already meeting criteria for probable mental health conditions (Charlson et al., 2019) in addition to substantial increases in psychosocial distress.

Guidance focused on the provision of mental health and psychosocial support (MHPSS) in humanitarian settings describes MHPSS as “any type of local or outside support that aims to protect or promote psychosocial wellbeing and/or prevent or treat mental disorder” (Inter-Agency Standing Committee (IASC) Reference Group for Mental Health and Psychosocial Support in Emergency Settings, 2007). These guidelines, however, do not incorporate guidance specific to climate change, likely due to the links only being recently prioritised and a lack of research in this area. Although not specifically focused on humanitarian settings, a recent study of climate change and mental health research priorities globally identified “assess[ing] the appropriateness, feasibility, effectiveness, and scalability of mental health and psychosocial interventions (clinical and non-clinical) in the context of climate change” as one of 10 key areas for further research (Charlson et al., 2022). This study also identified a need to consult with people and communities living in settings directly affected by climate change.

The goal of this study was to build on the work by Charlson and colleagues (2022) by attempting to understand priorities

for climate crisis and MHPSS intervention research specifically from the perspectives of those designing and implementing MHPSS programmes, policies and research, as well as those living and or working in areas heavily affected by climate change. Our research study was designed to respond to the following questions:

1. How should we define the parameters and terminology related to the field of MHPSS and climate crisis research?
2. What are the most pressing research questions or data evidence needs to support action on MHPSS in the context of the climate crisis?

## Methods

This study used a modified Delphi process, a research method for gathering consensus among experts to support decision-making (Helmer, 1967). Delphi studies are used to examine less well-explored topics and to identify and prioritise research gaps (James & Warren-Forward, 2015; Okoli & Pawlowski, 2004). A group of experts with demonstrated interest, engagement and/or expertise in MHPSS and the climate crisis were recruited and asked to respond to two online surveys administered using Qualtrics between September and November 2021 (Qualtrics, 2021). Both surveys were administered in English. This study was considered exempt by the McGill Faculty of Medicine and Health Sciences Research Ethics Board under Article 2.5 of Canada’s Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans. All participants provided informed consent before participating in the surveys.

## Sample and Recruitment

To be eligible for participation in the study, individuals had to be nominated by a colleague, based on demonstrated interest, experience and/or expertise in climate crisis and MHPSS work. Eligible participants were over the age of 18 and fell into at least one of the following categories: (1) professionally affiliated with an organisation or institution working in humanitarian or development policy or practice; (2) had research expertise on the climate crisis and MHPSS and/or (3) had direct personal experience working in areas impacted by the climate crisis.

Snowball sampling was used to identify prospective participants through the professional networks of the authors and other colleagues working in the area of MHPSS and the climate crisis. Information about the study was also disseminated through professional mailing lists and listservs of humanitarian and development organisations and agencies, including the MHPSS and Climate and Ecological Crisis Research Working Group, the IASC Reference Group on MHPSS in Emergency Settings, Save the Children country offices, the IFRC Psychosocial Centre, the Red Cross Red Crescent Climate Centre and the UNICEF MHPSS Community of Practice. A nomination form was developed using Google Forms. Colleagues used the nomination form to nominate up to six individuals at a time. Eligible nominees were contacted individually over email, invited to participate in the study and asked to further recommend other eligible candidates in their networks. Participant nominations were accepted

up until the time of administration of the second survey which meant that some participants who responded to survey 2 had not had the opportunity to respond to survey 1. A target sample size of 75–100 participants was set for this study. The target sample size was defined based on that typical of Delphi studies to ensure a broad representation of ideas and to account for inevitable participant attrition over multiple rounds (Hasson et al., 2000).

### Data Collection and Analysis

#### Survey 1: Identification of Research Priorities and Description of Climate Crisis and MHPSS Research

The first survey was developed and piloted with a working group that included the authors and others working in practice, policy and research focused on climate crisis and MHPSS research. The final version of the survey included demographic and eligibility questions (age; gender; WHO region of work (WHO, 2021); sector of work; type of organisation; role within organisation/area of work; interest, experience and/or expertise related to MHPSS and the climate crisis; work with populations who are most impacted by the climate crisis; WHO region in which work with populations who are most impacted by the climate crisis is conducted) and two open-ended questions with free-text response options: (1) “In the context of the climate crisis, what does mental health and psychosocial support research mean to you? Please consider terminology or wording to describe this area of research and boundaries (e.g. what types of research should be included or what should be studied within this area, what types of research should be excluded or what should not be studied within this area); (2) “What are the most pressing research questions or data evidence needs to support action on mental health and psychosocial support in the context of the climate crisis? Please provide a minimum of 3 priorities”. Definitions were provided for “MHPSS” (Inter-Agency Standing Committee (IASC) Reference Group for Mental Health and Psychosocial Support in Emergency Settings, 2007), “climate change” (UNFCCC, 2002) and the “climate crisis” (Cambridge Dictionary, 2021) and participants were asked to review these prior to answering the survey questions.

Data from demographic and eligibility questions were summarised as means, standard deviations, medians and ranges for continuous variables and tabulated for categorical and binary variables. Data from open-ended survey 1 questions were thematically analysed (Braun & Clarke, 2006) using NVivo software (version 12; QSR International Pty Ltd., 2021). Open-text responses to each of the research questions were coded and then organised into themes by one author (VG). A list of research priorities was developed out of the themes and subthemes coded under “research priorities” and discussed with the research team and working group. Through these discussions a final list of research priorities was synthesised. To develop a concept map to describe MHPSS and climate crisis research, data from the two questions in survey 1 were pooled and analysed together, with the themes represented in the final map. Coding meetings

were held between JA and VG to review emerging codes and underlying data and to finalise a codebook, research priority list and concept map.

#### Survey 2: Agreement and Ranking of Research Priorities and Refinement of Concept Map

The second survey was developed using the final list of research priorities and the initial version of the concept map developed from the survey 1 data. The second survey was piloted by members of the same working group as for survey 1. Participants were asked to indicate their agreement with each of the identified research priorities on a Likert scale from 1 (strongly disagree) to 5 (strongly agree). For each priority, participants could indicate how they would modify the priority, if at all. Participants were then asked to rank the research priorities from highest to lowest priority. Participants were presented with the version of the concept map developed using survey 1 data and asked to describe how they would modify the concept map, if at all. Participants who joined the study immediately prior to survey 2 and who had not had an opportunity to participate in survey 1 were additionally asked to respond to the same demographic and eligibility questions as for survey 1.

For ratings of agreement, the mean, standard deviation and range were calculated for each research priority. Agreement rating categories were then collapsed from five to three, reflecting new categories of “agree” (endorsements of 4 “agree” and 5 “strongly agree”), “neutral” (endorsements of 3 “neutral”) and “disagree” (endorsements of 1 “strongly disagree” and 2 “disagree”). Only statements rated as “agree” among 75% or more of the sample were retained as final (Hasson et al., 2000). The mean rank was calculated for participant generated rankings of each statement in the list of priorities. To be included in the list of top research priorities, a priority had to be ranked by participants as one of the top 10 most important priorities and meet the criteria of a rating of “agree” among 75% or more of the sample.

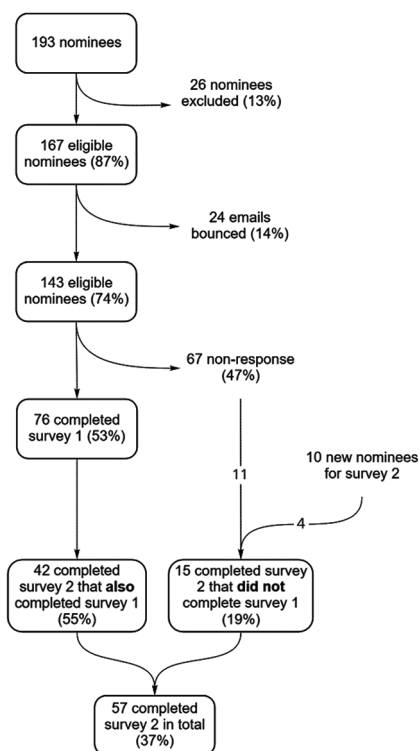
The research priorities presented to participants in survey 2 were not modified based on the modification suggestions. Modification suggestions for each research priority were analysed thematically and in reference to the average level of agreement and rank of each priority and are reported in-text. Open-ended responses, including modification suggestions pertaining to the concept map were analysed thematically and used to generate a final version of the concept map in consultation with the working group.

## Results

### Study Flow and Demographics

A total of 203 individuals were nominated for participation in the study (Figure 1). Survey 1 was completed by 76 participants out of 143 individuals who were nominated and eligible at the time of survey 1 administration (53% response rate). Survey 2 was completed by 57 participants out of 153 individuals who were nominated and eligible at the time of survey 2 administration (37% response rate). In total, 91 participants completed survey 1 and/or survey 2.

**Figure 1: Flow of Nominees and Participants through the Study.**  
 Note. Percentages indicate response rates



Demographic characteristics of the sample ( $n = 91$ ) are described in Table 1. Most participants identified as men ( $n = 53, 58\%$ ) were between 31 and 40 years of age ( $n = 37, 41\%$ ) and were working in the African WHO region ( $n = 52, 57\%$ ). Most participants were working for humanitarian organisations ( $n = 69, 76\%$ ) and/or development organisations ( $n = 49, 54\%$ ), including nongovernmental organisations ( $n = 65, 71\%$ ) or United Nations bodies ( $n = 20, 22\%$ ). Two-thirds of participants identified their work as pertaining to programming or practice ( $n = 56, 62\%$ ). More than two-thirds of participants reported working in MHPSS ( $n = 63, 69\%$ ), emergency preparedness and response ( $n = 34, 37\%$ ), health ( $n = 31, 34\%$ ) and/or protection ( $n = 25, 27\%$ ). Most participants reported having less than 10 years of work experience ( $n = 59, 65\%$ ). The majority of participants were working with populations living in settings directly affected by the climate crisis ( $n = 80, 88\%$ ), with these populations located mostly in the African WHO region ( $n = 44, 55\%$ ).

### Survey 1: Identification of Research Priorities and Description of Climate Crisis and MHPSS Research

Three major themes for research priorities in MHPSS and climate crisis research were identified based on a thematic analysis of survey 1 data. These included (1) understanding needs and context, (2) designing and implementing interventions and (3) evaluating interventions (see Table S1 for the full codebook). A total of 24 research priorities were identified and categorised under the three themes (Table 2). Synthesis of responses to the survey 1 question about the meaning of MHPSS and climate crisis research revealed a fourth theme describing research methodologies and paradigms. All four themes

**Table 1: Demographic Table of Study Participants**

Sociodemographic characteristics	Full sample (n=91)		Survey 1 sample (n=76)		Survey 2 sample (n=57)	
	n	%	n	%	n	%
Gender						
Women	37	41	29	38	25	44
Men	53	58	46	61	32	56
Gender-fluid/nonbinary	1	1	1	1	0	
Age						
Mean (SD)	38.9 (11.0)		38.4 (10.6)		39.4 (11.4)	
Range	22, 69		22, 69		22, 69	
<30	22	24	19	25	14	26
31-40	37	41	32	42	22	42
41-50	16	18	13	17	11	21
>51	15	17	11	14	10	19
WHO region (participants) <sup>1</sup>						
African region	52	57	35	46	17	30
Region of the Americas	27	30	12	16	15	26
South-East Asian region	14	15	6	8	8	14
European region	24	26	14	18	10	18
Eastern Mediterranean region	2	2	1	1	1	2
Western Pacific region	9	10	5	7	4	7
Global	5	5	3	4	2	4
Type of organisation						
Governmental	10	11	9	12	5	9
Nongovernmental organisation	65	71	54	71	36	65
United Nations	20	22	16	21	15	26
Private	4	4	4	5	3	5
Academic institution	9	10	7	9	9	16
Others	2	2	1	1	2	4
Organisation sector <sup>2</sup>						
Humanitarian	69	76	58	76	36	63
Development	49	54	39	51	26	46
Research	13	14	9	12	16	28
Others <sup>3</sup>	3	3	3	4	2	4
Discipline						
Programming or practice	56	62	47	62	32	56
Policy	12	13	8	11	10	18
Research	18	20	17	22	12	21
Others <sup>4</sup>	5	5	4	5	3	5
Area of work <sup>2</sup>						
MHPSS across sectors	63	69	52	68	39	68
Emergency preparedness and response	34	37	26	34	21	37
Health	31	34	25	33	20	35
Protection	25	27	20	26	11	19
Climate change	23	25	19	25	13	23
Education	21	23	16	21	12	21
Human rights	19	21	14	18	13	23
Gender equality	15	16	13	17	7	12
WASH	10	11	8	11	6	11
Livelihoods	9	10	5	7	7	12
Nutrition	7	8	4	5	6	11

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**Table 1: Contd...**

Sociodemographic characteristics	Full sample (n=91)		Survey 1 sample (n=76)		Survey 2 sample (n=57)	
	n	%	n	%	n	%
Early recovery	7	8	4	5	5	9
Conflict management	6	7	2	3	5	9
Food security	6	7	5	7	4	7
Others <sup>5</sup>	7	8	3	4	5	9
Work experience (years)						
1-3	19	21	15	20	12	21
4-6	22	24	21	28	8	14
7-9	18	20	17	22	11	19
>10	32	35	23	30	26	46
Working with populations impacted by the climate crisis						
Yes	80	88	66	87	52	93
No	11	12	10	13	4	7
WHO region (populations) <sup>6</sup>	n=80		n=66		n=52	
African region	44	55	39	59	17	33
Region of the Americas	12	15	10	15	6	12
South-East Asian region	12	15	9	14	7	13
European region	4	5	3	5	3	6
Eastern Mediterranean region	9	11	7	11	3	6
Western Pacific region	17	21	11	17	6	12
Global	18	23	14	21	11	21

*Notes.* MHPSS, mental health and psychosocial support; SD, standard deviations; WHO, World Health Organisation. <sup>1</sup>WHO region (participants) refers to the location of study participants. <sup>2</sup>Categories were not mutually exclusive as participants were able to select more than one. <sup>3</sup>The other category includes peace-building organisation, mental health organisation and environmental organisation. <sup>4</sup>The other category includes science production for policy, editorial work, clinical practice and climate action. <sup>5</sup>The other category includes shelter, camp co-ordination, logistics and emergency telecommunications. <sup>6</sup>WHO region (populations) refers to the location of populations impacted by the climate crisis that study participants were working with. Only participants who endorsed working directly with populations affected by the climate crisis responded to this question.

were represented in an initial version of the concept map (See Figure S1).

### Understanding Needs and Context

Participants placed a strong emphasis on research priorities that aim to understand the needs of populations experiencing adverse climate change impacts to inform context and population-specific MHPSS and climate crisis programming. This theme included overarching questions regarding the relationship between the climate crisis and mental health and wellbeing in general, as well as more focused questions on how the climate crisis affects the mental health and wellbeing of specific populations such as those most impacted by the climate crisis, children

and young people, black, indigenous and other people of colour, populations experiencing other crises concurrently, including armed conflict, people with disabilities, people facing discrimination, low-income populations, people with intersectional identities, refugees, internally displaced people and migrants, climate change activists, people with pre-existing physical and mental health conditions and those without access to healthcare, and other structurally disadvantaged groups. This theme included research questions on both direct and indirect impacts of the climate crisis on mental health and wellbeing, as well as understanding perceptions of the climate crisis, coping and adaptation strategies in individuals and communities, and how these relate to concepts of resilience at multiple levels (i.e. at individual, family, community and societal levels). Many participants reported on the importance of recognising varied experiences of climate change and mental health and wellbeing impacts in different social and cultural contexts.

### Designing and Implementing Interventions

The second theme focused on designing and implementing interventions to address the mental health and psychosocial wellbeing needs identified in the first theme. Questions were concerned with how mental health and wellbeing needs could be met by intervening at multiple levels, from individual to systems levels, including the role of governments and global responses. Participants expressed the need for research to design and implement interventions to promote mental health and psychosocial wellbeing, prevent adverse mental health and wellbeing impacts, and simultaneously support mental health and wellbeing and climate change mitigation and/or adaptation. Participants also expressed the need to understand what best practices already exist in addressing mental health and wellbeing when responding to climate crisis-related risks, whether existing MHPSS interventions would need to be adapted in the context of the climate crisis, and whether new interventions need to be designed. From an implementation perspective, participants wondered who would be best positioned to deliver MHPSS interventions in the context of the climate crisis, how community stakeholders could be centred in both MHPSS and climate crisis responses, and what the role of national governments is in contributing to these responses at a global scale.

### Evaluating Interventions

The third theme concerned evaluating interventions in the context of the climate crisis. Specifically, this involved understanding how mental health and wellbeing indicators and outcomes would be measured within multisectoral MHPSS and climate crisis responses, and whether indicators and outcomes would need to be modified to include new constructs such as climate change anxiety. Participants also described the need to understand how to best evaluate the effectiveness of existing MHPSS programmes in specifically addressing mental health and wellbeing needs associated with the climate crisis. This theme also included evaluating whether MHPSS interventions could contribute to increased engagement in climate crisis mitigation and/or adaptation strategies by supporting mental health and wellbeing.

**Table 2: Research Priorities Presented in Order of Participant-Generated Mean Ranks**

Research priority	Thematic category	Ranking		Agreement		Agreement percentage		
		Mean (SD)	Range	Mean (SD)	Range	Disagree	Neutral	Agree
#1 <sup>1</sup> What are the direct (e.g. extreme weather events) and indirect (e.g. food insecurity resulting from droughts and land loss) impacts of climate change on mental health and psychosocial wellbeing and how are these impacts related?	Understanding needs and context	4.96 (4.7)	1-22	4.46 (0.88)	1-5	5%	5%	89%
#2 <sup>1</sup> How does climate change affect the mental health and psychosocial wellbeing of different populations? (e.g. frontline communities, children and young people migrants, people with disabilities, lower income populations, the elderly, people already experiencing crises such as armed conflict, people living with pre-existing mental health conditions, people facing discrimination and people with intersectional identities)	Understanding needs and context	5.34 (4.5)	1-23	4.61 (0.83)	1-5	5%	2%	93%
#3 <sup>1</sup> What are different perceptions and understandings of the climate crisis across different cultures and contexts?	Understanding needs and context	6.00 (6.1)	1-23	4.28 (0.77)	1-5	2%	9%	89%
#4 <sup>1</sup> How are different populations adapting to and coping with the climate crisis? (e.g. frontline communities, children and young people migrants, people with disabilities, lower income populations, the elderly, people already experiencing crises such as armed conflict, people living with pre-existing mental health conditions, people facing discrimination and people with intersectional identities)	Understanding needs and context	6.16 (3.0)	2-14	4.51 (0.86)	1-5	5%	4%	91%
#5 How does mental health and wellbeing contribute to engagement in environmental protection, climate change adaptation and climate change mitigation efforts?	Understanding needs and context	7.77 (5.6)	1-24	4.26 (1.13)	1-5	9%	12%	79%
#6 <sup>1</sup> How can we address mental health and psychosocial wellbeing concerns related to the climate crisis, at the individual, family and community level?	Designing and implementing interventions	7.82 (3.6)	1-22	4.58 (0.82)	1-5	4%	5%	91%
#7 <sup>2</sup> What are the characteristics of mental health and psychosocial wellbeing responses to climate change, which responses are considered adaptive in a given culture or context, and which responses require additional supports?	Understanding needs and context	8.11 (4.8)	3-24	4.02 (1.12)	1-5	12%	14%	74%
#8 <sup>1</sup> How can we promote positive mental health and psychosocial wellbeing in the context of the climate crisis?	Designing and implementing interventions	9.27 (4.2)	1-21	4.35 (0.83)	1-5	4%	7%	89%
#9 <sup>1</sup> What are the best practices to support the mental health and wellbeing of different populations in the context of the climate crisis (e.g. frontline communities, children and young people migrants, people with disabilities, lower income populations, the elderly, people already experiencing crises such as armed conflict, people living with pre-existing mental health conditions, people facing discrimination and people with intersectional identities)?	Designing and implementing interventions	10.14 (5.1)	1-24	4.51 (0.92)	1-5	5%	4%	91%
#10 <sup>2</sup> What are global climate change trends and how do these impact livelihoods and farming environments?	Understanding needs and context	10.79 (9.0)	1-24	3.81 (1.12)	1-5	16%	16%	68%
#11 How can we prevent adverse impacts on mental health and psychosocial wellbeing as a result of the climate crisis?	Designing and implementing interventions	11.34 (4.6)	2-24	4.23 (0.97)	1-5	5%	12%	82%

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**Table 2: Contd...**

Research priority	Thematic category	Ranking		Agreement		Agreement percentage		
		Mean (SD)	Range	Mean (SD)	Range	Disagree	Neutral	Agree
#12 Do existing MHPSS programmes need to be adapted for implementation in the context of the climate crisis, and if so, how should these programmes be modified?	Designing and implementing interventions	11.38 (4.5)	1-21	4.32 (0.92)	1-5	5%	11%	84%
#13 How do MHPSS interventions need to be adapted to meet specific cultural and community needs in the context of the climate crisis?	Designing and implementing interventions	12.98 (3.7)	3-21	4.39 (0.99)	1-5	7%	11%	82%
#14 How can we design interventions to meet mental health and psychosocial needs while also contributing to climate change adaptation and/or mitigation?	Designing and implementing interventions	13.70 (4.5)	1-22	4.11 (0.97)	1-5	7%	16%	77%
#15 How can community ownership of climate crisis responses be promoted?	Designing and implementing interventions	14.95 (5.1)	5-24	4.19 (1.12)	1-5	9%	12%	79%
#16 How can we promote community resilience in the context of the climate crisis?	Designing and implementing interventions	16.13 (4.7)	1-24	4.25 (1.06)	1-5	12%	5%	82%
#17 What obstacles exist for community leadership and engagement in MHPSS as part of climate crisis responses and how can these obstacles be overcome?	Designing and implementing interventions	16.36 (3.2)	1-24	4.30 (0.88)	1-5	4%	7%	89%
#18 What are the resources, training and capacity needs for implementing MHPSS and climate crisis interventions?	Designing and implementing interventions	16.79 (4.1)	4-23	4.16 (1.10)	1-5	11%	12%	77%
#19 How does promoting mental health, psychosocial wellbeing and community resilience contribute to engagement in environmental protection, climate change adaptation and climate change mitigation efforts?	Evaluating interventions	17.02 (7.6)	1-24	4.37 (0.95)	1-5	2	89%	89%
#20 <sup>2</sup> Who is best positioned to deliver MHPSS interventions in the context of the climate crisis?	Designing and implementing interventions	18.04 (4.6)	5-24	3.84 (1.06)	1-5	7%	28%	65%
#21 How can we evaluate the effectiveness of existing MHPSS interventions in the context of the climate crisis?	Evaluating interventions	18.04 (5.2)	1-24	4.40 (0.88)	1-5	4%	11%	86%
#22 How can we measure mental health and psychosocial wellbeing indicators and outcomes that are culturally appropriate and consistent within climate crisis and MHPSS programming?	Evaluating interventions	18.48 (6.1)	2-24	4.21 (1.06)	1-5	7%	16%	77%
#23 <sup>2</sup> How do we generate an equity index that reflects what each country should do to support mental health and psychosocial wellbeing in the context of the climate crisis globally, given unequal consumption and the harms of colonisation, warfare and genocide?	Designing and implementing interventions	18.73 (4.5)	5-24	3.82 (1.16)	1-5	14%	25%	61%
#24 How can we evaluate MHPSS outcomes within multisectoral responses to the climate crisis?	Evaluating interventions	19.73 (4.2)	6-24	4.19 (0.94)	1-5	4%	21%	75%

*Note.* MHPSS, mental health and psychosocial support. <sup>1</sup>Priorities that reached consensus and were also ranked as within the top 10 priorities. <sup>2</sup>Priorities that did not reach the 75% agreement rating value indicating consensus.

### Research Methodologies and Paradigms

The fourth theme delineated research methodologies and paradigms for use in MHPSS and climate crisis research. Intersectionality, climate justice and planetary health were paradigms and theoretical frameworks identified as useful for research in this area. Acknowledging interconnectedness, the importance of just approaches and centring indigenous research were also noted as important to the field of climate crisis and MHPSS research. The need for multidisciplinary, action-oriented and participatory methods that facilitate

inclusive research and enable exploratory research enquiries was described. Several epidemiological study designs were also proposed to examine the impact of the climate crisis on mental health and psychosocial wellbeing in individuals and communities in different settings, and to assess implementation and evaluate interventions. These included causal, descriptive and longitudinal study designs, as well as modelling and predictive studies. However, it was noted that methodological challenges exist, particularly in regard to causal attribution studies.

## Survey 2: Agreement and Ranking of Research Priorities and Refinement of Concept Map

Out of 24 research priorities, consensus was obtained for 20 (a rating of “agree” among 75% or more of the sample; Table 2). Of these 20, 5 (25%) priorities were categorised under “Understanding needs and context”, 11 (55%) under “Designing and implementing interventions” and 3 (15%) under “Evaluating interventions” (Table 2). The top eight research priorities, identified according to participant ranking and on which there was consensus among 75% or more of the sample, included the following (Table 2):

*Priority #1: What are the direct (e.g. extreme weather events) and indirect (e.g. food insecurity resulting from droughts and land loss) impacts of climate change on mental health and psychosocial wellbeing and how are these impacts related?*

This priority focused on how different mental health and wellbeing needs could arise based on the social, cultural and economic consequences from direct and indirect climate impacts, such as loss of livelihoods, increased food insecurity and forced migration (see Table S1). Participants were particularly interested in understanding the mental health and wellbeing impacts from slow-onset climate change phenomena such as prolonged droughts, rising sea levels and loss of habitable environments. Through the modification suggestions for this priority, a few participants suggested that the links between climate change and mental health and wellbeing had already been established and that instead research should focus on intervention design and practical implications for adapting MHPSS programming in anticipation of climate crisis-related mental health and wellbeing impacts (Table 3).

*Priority #2: How does climate change affect the mental health and psychosocial wellbeing of different populations? (e.g. frontline communities, children and young people, migrants, people with disabilities, lower income populations, the elderly, people already experiencing crises such as armed conflict, people living with pre-existing mental health conditions, people facing discrimination and people with intersectional identities)*

This priority was focused on how climate change affects mental health and wellbeing and how impacts may differ across populations. Participants wanted research to cover various populations, but particularly to focus on communities experiencing the worst impacts of the climate crisis, children and young people, people living with pre-existing mental health conditions and populations on the move (refugees, internally displaced people and migrants) (see Table S1). Participants called for research that centres the voices of populations, as one participant in survey 1 summarised: “Research should cover all of these issues and include the opinions of the affected populations about what issues most affect their mental health, how they believe climate change impacts them and how they think their livelihoods could be made more sustainable.” Modification suggestions for this priority were similar to those for priority #1, with calls for research to shift away from studying climate crisis-related impacts and focus on

actions to improve mental health and wellbeing outcomes (Table 3).

*Priority #3: What are different perceptions and understandings of the climate crisis across different cultures and contexts?*

This research priority was focused on exploring how the climate crisis was being perceived in different contexts (see Table S1). As one participant summarised, this priority focuses on “understanding psychosocial stressors and people’s local coping mechanisms [and] sociocultural representations and perceptions of climate crises”. Particularly, participants wondered how people in the most climate-vulnerable regions are perceiving climate-related threats. One proposed modification to this priority was the suggestion to further investigate whether different climate change perceptions had a direct influence on the types of behaviours people were engaging in (e.g. climate adaptation strategies; Table 3).

*Priority #4: How are different populations adapting to and coping with the climate crisis? (e.g. frontline communities, children and young people, migrants, people with disabilities, lower income populations, the elderly, people already experiencing crises such as armed conflict, people living with pre-existing mental health conditions, people facing discrimination and people with intersectional identities)”*

This priority focused on research documenting coping mechanisms and adaptive behaviours that different populations are employing in the face of the climate crisis. This includes understanding how climate change perceptions (priority #3) influence motivations to adapt and cope with the climate crisis, not only at the individual level but also at population and systems levels (see Table S1). Participants also highlighted that it was important to understand how capacities to cope with the climate crisis were impacted in populations experiencing overlapping challenges, such as migration and conflict. Some participants indicated in the modification suggestions that this priority was phrased too broadly and suggested specifying research on factors that support or hinder short- and long-term adaptation and coping; and investigating the impacts of structural inequalities such as systemic racism and other forms of discrimination on coping abilities and strategies (Table 3).

*Priority #5: How does mental health and wellbeing contribute to engagement in environmental protection, climate change adaptation and climate change mitigation efforts?*

This priority explores whether individual or community mental health and wellbeing contributes to engagement with climate change adaptation and/or mitigation responses and whether outcomes of this research could be used to design interventions that increase the participation of individuals or communities in climate crisis responses (see Table S1). One concern that participants raised in the modification suggestions was that the framing of this priority-risked individualising climate action and not conceptualising responsibilities for climate responses



**Table 3:** Research Priorities Ranked according to their Average Ranking Score and including Suggested Modifications

Rank	Research priority	Suggested modifications
1	What are the direct (e.g. extreme weather events) and indirect (e.g. food insecurity resulting from droughts and land loss) impacts of climate change on mental health and psychosocial wellbeing and how are these impacts related?	General links already established, need to link with practical implications for MHPSS responses and how anticipated impacts may influence this Focus on different levels (individual to societal) and for different populations
2	How does climate change affect the mental health and psychosocial wellbeing of different populations?1	Shifting research focus away from impacts and more on actions that are needed Collapse population examples under “people in vulnerable positions”
3	What are different perceptions and understandings of the climate crisis across different cultures and contexts?	Add how these may link with behaviours
4	How are different populations adapting to and coping with the climate crisis?1	Specify factors that support or hinder short term and long-term adaptation and coping (e.g. structural inequalities, systemic racism) Too broad
5	How does mental health and wellbeing contribute to engagement in environmental protection, climate change adaptation and climate change mitigation efforts?	Risks individualising climate action and not viewing this in the context of global climate injustices Too vague, not clear whether this is specifying at individual level or not
6	How can we address mental health and psychosocial wellbeing concerns related to the climate crisis, at the individual, family and community level?	Add societal/global level, as there are climate change impacts that go beyond the community level
7 <sup>2</sup>	What are the characteristics of mental health and psychosocial wellbeing responses to climate change, which responses are considered adaptive in a given culture or context and which responses require additional supports?	Too ambiguous and complex, with confusing wording Individualises the issue with less focus on sociopolitical context Links to priorities 4, 6, and 8
8	How can we promote positive mental health and psychosocial wellbeing in the context of the climate crisis?	Ambiguous wording, not clear who “we” is, and which climate change contexts Links to priority 7
9	What are the best practices to support the mental health and wellbeing of different populations in the context of the climate crisis?1	Differentiate how these best practices may be different to other MHPSS responses in other settings
10 <sup>2</sup>	What are global climate change trends and how do these impact livelihoods and farming environments?	Too broad, not linked directly to MHPSS, yet also too specified with a focus only on livelihoods and farming
11	How can we prevent adverse impacts on mental health and psychosocial wellbeing as a result of the climate crisis?	Question implies that crises are single events, yet they are often ongoing and multiple Preventing impact is very unlikely, would be more effective to address climate change at the root cause. Rephrase prevent to: reduce risk, lessen, mitigate and buffer against.
12	Do existing MHPSS programmes need to be adapted for implementation in the context of the climate crisis, and if so, how should these programmes be modified?	Add MHPSS policies and frameworks, as these guide interventions Could merge with 13
13	How do MHPSS interventions need to be adapted to meet specific cultural and community needs in the context of the climate crisis?	Redundant to 12 (many programmes are already sensitive to cultural and community needs) Could merge with 12
14	How can we design interventions to meet mental health and psychosocial needs while also contributing to climate change adaptation and/or mitigation?	Could expand this question to not only include interventions, but the MHPSS and aid sector in general
15	How can community ownership of climate crisis responses be promoted?	Can risk individualising the responsibility to respond, when it is often at a political or corporate level where changes have to occur Need to explore the relationship with government responses Not clear whether it is practical that MHPSS responses are responsible for promoting climate crisis responses
16	How can we promote community resilience in the context of the climate crisis?	Need to define “we” and what community resilience means Should change the word “promote” to “strengthen” Some overlap with priorities 8 and 9
17 <sup>2</sup>	What obstacles exist for community leadership and engagement in MHPSS as part of climate crisis responses and how can these obstacles be overcome?	Too vague wording Add a specific focus on local actors and youth
18	What are the resources, training and capacity needs for implementing MHPSS and climate crisis interventions?	Need to specific across which sectors Needs a follow-up question on how to meet these needs, e.g., requirement for donors
19 <sup>2</sup>	How do promoting mental health, psychosocial wellbeing and community resilience contribute to engagement in environmental protection, climate change adaptation and climate change mitigation efforts?	Merge with priority 4

Contd...

**Table 3: Contd...**

Rank	Research priority	Suggested modifications
20 <sup>2</sup>	Who is best positioned to deliver MHPSS interventions in the context of the climate crisis?	Change phrasing to ask who the multiple actors could be, rather than focusing it on one sector or professional Links to priorities 12 and 13
21	How can we evaluate the effectiveness of existing MHPSS interventions in the context of the climate crisis?	Broaden the question to ask what the difference in evaluation may be compared to MHPSS interventions in other contexts Many good evaluation tools exist but are not being as effectively implemented
22	How can we measure mental health and psychosocial wellbeing indicators and outcomes that are culturally appropriate and consistent within climate crisis and MHPSS programming?	Many good MHPSS indicators exist, perhaps better to focus on including climate change indicators in MHPSS programming
23 <sup>2</sup>	How do we generate an equity index that reflects what each country should do to support mental health and psychosocial wellbeing in the context of the climate crisis globally, given unequal consumption and the harms of colonisation, warfare and genocide?	Very broad and difficult to measure or put into practice Could focus rather on enhancing existing measures with a focus on climate change
24	How can we evaluate MHPSS outcomes within multisectoral responses to the climate crisis?	Broaden the question to ask what the difference in evaluation may be compared to MHPSS interventions in other contexts, or how to effectively evaluate multisectoral MHPSS outcomes in general Could merge with priority 21 Question may be too premature at this point as it still needs to be established whether MHPSS interventions need to be adapted

*Note. MHPSS, mental health and psychosocial support. <sup>1</sup>For example, communities most impacted by the climate crisis, children and young people, migrants, people with disabilities, lower income populations, the elderly, people already experiencing crises such as armed conflict, people living with pre-existing mental health conditions, people facing discrimination and people with intersectional identities. <sup>2</sup>Priorities with agreement percentages lower than the 75% cut-off value.*

within global climate injustices and the need for collective action, which are relevant considerations for subsequent intervention designs (Table 3).

*Priority #6: How can we address mental health and psychosocial wellbeing concerns related to the climate crisis at the individual, family and community level?"*

Participants indicated that research on mental health and psychosocial wellbeing in the context of the climate crisis should not only focus on establishing what mental health and wellbeing needs are present, but also how people can be supported at multiple levels to cope with the negative impacts of the climate crisis (see Table S1). In modification suggestions, participants mentioned that research under this priority should also include interventions at the societal and global level, as climate change impacts and ways to address these can extend beyond the level of communities.

*Priority #8: How can we promote positive mental health and psychosocial wellbeing in the context of the climate crisis?"*

This priority focused on identifying strategies to promote positive mental health and wellbeing as a way of preventing adverse mental health and wellbeing impacts related to the climate crisis and improving engagement on climate crisis-related issues (see Table S1). This could also include assessing whether certain climate change adaptation and mitigation interventions also have positive impacts on mental health and wellbeing. In modification suggestions, some participants felt that it was not clear from which perspective this priority was phrased and that it would make it clearer to specify if the collective "we" was referring to MHPSS practitioners or other stakeholders (Table 3).

*Priority #9: What are the best practices to support the mental health and wellbeing of different populations in the context of the climate crisis (e.g. frontline communities, children and young people, migrants, people with disabilities, lower income populations, the elderly, people already experiencing crises such as armed conflict, people living with pre-existing mental health conditions, people facing discrimination and people with intersectional identities)?"*

Participants were interested in learning about best practices for MHPSS programming in the context of the climate crisis (see Table S1). This included understanding what suitable models of care and support should be provided and have already proven to be particularly effective. As one participant summarised, research in this area should "assess the psychological reactions and social distress triggered by climate crisis and recommend approaches to behavioural change that can prevent/mitigate climate change as well as techniques and support to enable people [to experience] emotional relief, coping skills and [to] build resilience". One modification suggestion for this priority was to add how best practices for MHPSS responses in the climate crisis context may be similar or different to best practices in other settings, such as conflict-affected environments (Table 3).

Research priorities ranked within the top 10 by participants but for which there was not consensus included: "Priority #7: What are the characteristics of mental health and psychosocial wellbeing responses to climate change, which responses are considered adaptive in a given culture or context and which responses require additional supports?" and "Priority #10: What are global climate

change trends and how do these impact livelihoods and farming environments?” (Table 2). In modification suggestions, participants commented that the wording for priority #7 was too ambiguous and complex, including multiple research questions within one priority (Table 3). Others felt that the priority risked individualising negative mental health and wellbeing impacts of the climate crisis, neglecting a focus on the wider sociopolitical contexts in which they are taking place. For priority #10, several participants found the priority too broad and not linked directly with MHPSS, or too specific with its focus on livelihoods and farming environments (Table 3).

### Refinement of Concept Map

Participants were also asked to comment on the initial version of the concept map, developed using survey 1 data (see Figure S1) and refined based on feedback from survey 2 (Figure 2). The conceptual framework presents preliminary parameters and terminology related to the field of MHPSS and climate crisis research. Modifications to the initial map included situating MHPSS and climate crisis research within broader research paradigms such as climate justice, intersectionality and planetary health. Participants also felt that further research was needed to inform the adaptation of existing MHPSS policies and frameworks that guide programming in the context of the climate crisis. Certain population groups, such as decision-makers and those with limited access to healthcare, were also added to the map. Some participants felt that aspects of the map should be highlighted, such as action-oriented research and implementation research. As the aim of the concept map is

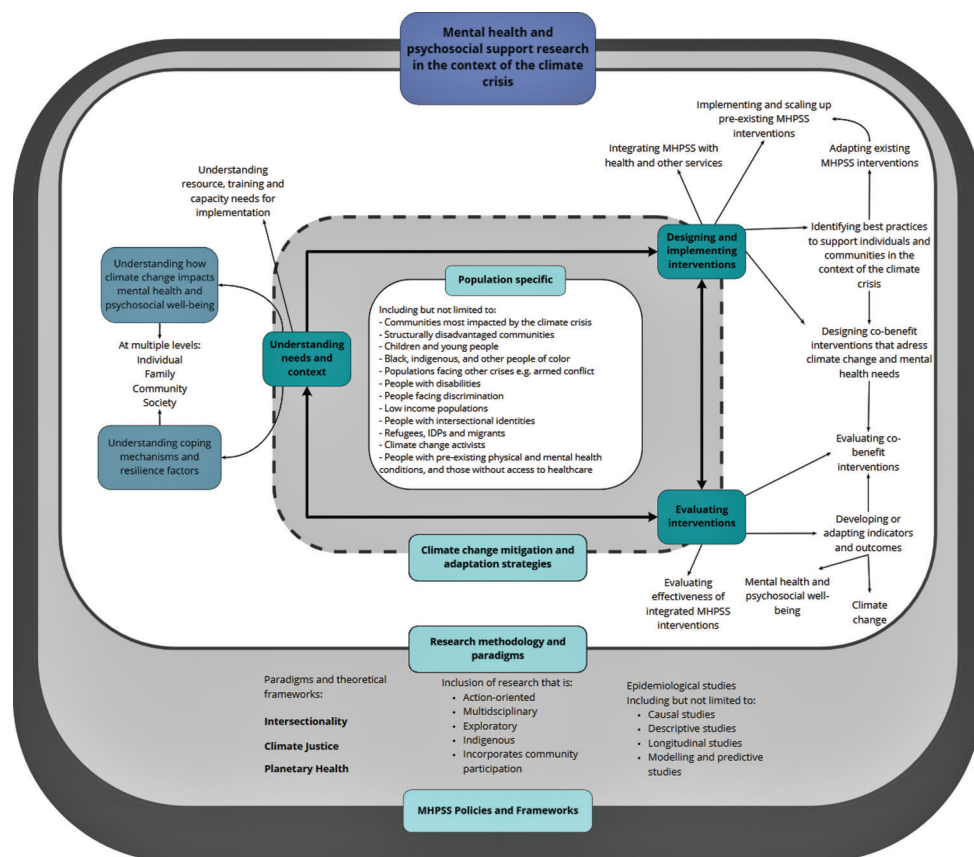
to give a broad overview of the research field, the research team elected not to highlight specific methodological approaches or areas of focus but rather to present a wide array of methods that different participants had mentioned in surveys 1 and 2.

### Discussion

The results of this modified Delphi study, including the top eight research priorities ranked by participants, suggest that MHPSS and climate crisis research should include assessing population needs and how climate change intersects with mental health and wellbeing; understanding how to design, adapt and implement MHPSS interventions in the specific context of the climate crisis; and examining how best to evaluate MHPSS and climate crisis focused interventions, including selection and measurement of indicators and outcomes (Table 2, Figure 2). Consensus (agreement among 75% or more of the sample) was reached for 20 of 24 research priorities within these broad research areas. Data were collected primarily from individuals working within humanitarian and development programming and practice, including on MHPSS specifically, and relatively few researchers participated in the study. The results of this study should be interpreted from this perspective.

These core areas of inquiry alongside key research methodologies and paradigms (Figure 2), align with existing guidance on components of both research and programme cycles in humanitarian settings (Applied Mental Health Research Group, 2013;

Figure 2: Concept Map for Mental Health and Psychosocial Support Research in the Context of the Climate Crisis



OCHA, 2020). There is value in research designed to examine how climate crisis responses could be integrated into existing MHPSS programming, and how mental health and psychosocial wellbeing shape the implementation of climate change mitigation and adaptation strategies.

The relative ranking of research priorities in order of importance (Table 2) and the resulting top eight research priorities that primarily relate to understanding needs and contexts as well as designing and implementing interventions may reflect the nascent stage of climate crisis and MHPSS research. A common thread across many research priorities included a lack of clarity on what MHPSS programmes and policies may look like in the context of the climate crisis. Future work is needed to characterise existing intersections between MHPSS and the climate crisis, including not only epidemiological associations, but more fundamental definitional and conceptual issues.

Other work to establish research priorities for the MHPSS field more broadly has been conducted (Lee et al., 2019; Tol et al., 2012). In these cases, the samples were composed of expert groups and research priorities were defined using interviews, focus group discussions and online surveys (Lee et al., 2019; Tol et al., 2012). Our study differs from these exercises due to its specific focus on MHPSS and climate crisis research. As our sample was also composed of experts, our study used an online survey format and did not incorporate interviews or focus groups.

Recent calls for conceptual clarity in the concept of MHPSS more generally have pointed to the importance of attending to how mental health and wellbeing are informed by intrapersonal and environmental factors and processes at multiple levels to develop thoughtful theories of change and select and implement interventions (Miller et al., 2021). Such principles may equally apply to climate crisis and MHPSS research. Indeed, our study highlighted the need to centre populations at all stages of MHPSS research and the importance of understanding the multiple levels of impact. Our findings also indicate that climate crisis and MHPSS research should promote action-oriented and participatory methodologies, as well as climate justice and intersectional frameworks.

The results of this study align with and build upon recently identified global priorities for climate change and mental health research (Charlson et al., 2022). Like the study by Charlson and colleagues (2022), our study identified research priorities to examine the links between the climate crisis and mental health, to appropriately characterise and assess climate crisis and mental health outcomes and impacts, to inform the implementation and evaluation of MHPSS and climate crisis interventions, and to incorporate engagement on the climate crisis (including in climate change adaptation and mitigation) in climate crisis and MHPSS research. Given the focus of this study on intervention research and programming perspectives, the research priorities identified in this study do not focus extensively on causal pathways, climate change communication, climate change-related decision-making or economic costs associated with the mental health impacts

of the climate crisis, which were identified as priorities in the Charlson et al. (2022) study. This study adds to the work by Charlson et al. (2022) by focusing specifically on climate crisis and MHPSS intervention research (i.e. research with a programmatic and/or policy focus) and by recruiting a sample predominantly made up of professionals working in this area for humanitarian and development-oriented organisations and agencies. The results of this study could be used to emphasise areas of prioritisation for intervention research funding, encourage organisations to conduct needs and resource assessments geared at adapting existing intervention strategies or developing new strategies for implementation in the context of the climate crisis, encourage organisations to collect and use monitoring and evaluation data focused on MHPSS and climate crisis indicators and outcomes, and to encourage programme designers, evaluators, researchers and policy makers to explore the scope and breadth of MHPSS interventions in the context of the climate crisis.

### Limitations

The primary limitation of this study was the inability to conduct multiple Delphi rounds due to time and resource constraints. This meant that agreement ratings, modification suggestions and ranking of research priorities were collected simultaneously in survey 2, thereby limiting our ability to make iterative modifications to the research priorities and assess stability of ratings (von der Gracht, 2012). Despite this limitation, consensus was reached for 20 of 24 priorities, potentially indicating that the qualitative investigation under survey 1 was helpful to sufficiently synthesise and articulate the final list of priorities. Participants were not, however, given an opportunity to quantitatively indicate their agreement with the concept map.

As recruitment occurred primarily through professional networks, some groups engaged in climate crisis and MHPSS work may not have been represented in the sample. The surveys were also conducted in the English language and participation in the study required access to a stable Internet connection which may have served as a barrier to participation and global representation. Finally, this study focused on the climate crisis and the surveys did not explicitly include language around environmental degradation or the broader ecological emergency, which represent equally important and intertwined planetary health challenges and warrant further consideration in the context of MHPSS research.

### Conclusion

This study sought to understand and to begin to characterise the most pressing research questions or data evidence needs for climate crisis and MHPSS research. Drawing on the perspectives of those with relevant interest, experience and expertise, we identified 20 research priorities for climate crisis and MHPSS research. The top eight priorities focused on understanding population needs and context and designing and implementing interventions. However, we recognised in designing and analysing the study that there

were a range of perspectives around the scope of MHPSS actions in this area, reflecting live contemporary debates around emerging terminology of climate change anxiety, grief, denial and similar concepts. Given the ubiquitous experience of the climate crisis and its magnitude, the field must not only respond to needs using MHPSS frameworks (potentially risking medicalisation), but look outwards towards how it can contribute to the broader debates and action to mitigating and adapting to the climate crisis while promoting just international development. In this way, the very real concerns of the most heavily affected populations, programmers and policy makers might drive the changes that are needed at individual and population levels.

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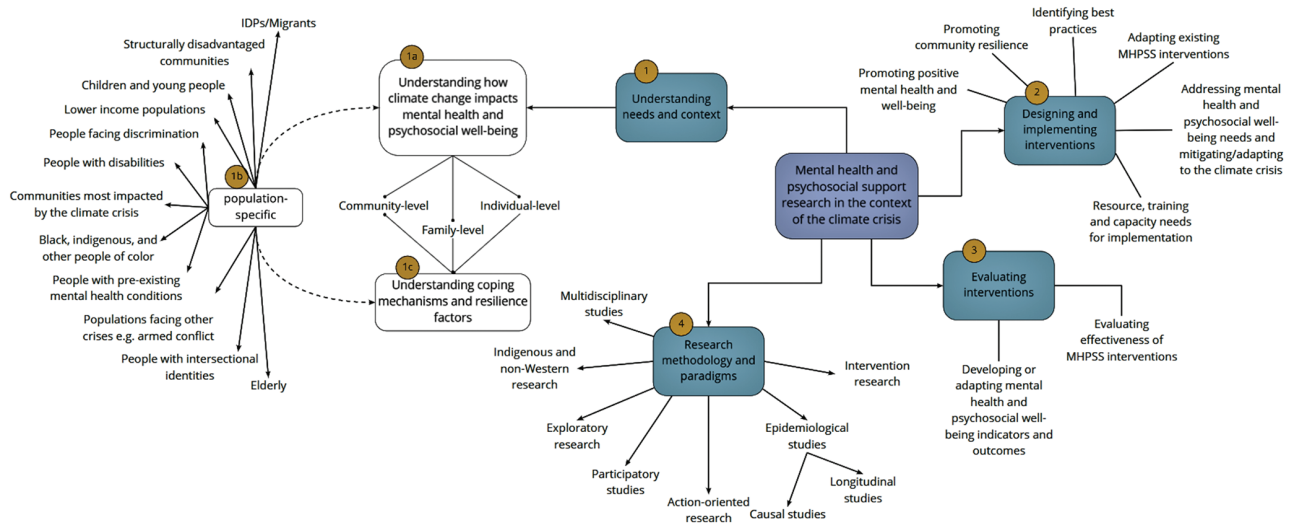
### Conflicts of interest

There are no conflicts of interest.

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Figure S1: Initial Concept Map Shown to Participants in Survey 2



**Table S1: Thematic Analysis Codebook for Initial Survey Data**

Theme or subtheme	Description	Number of participants
Defining the research field	High-level theme of all responses that aimed to define what MHPSS research meant in the context of the climate crisis, and areas that are included or excluded in this research field.	53
Theme 1: Methodology	Description of types of methodologies or theoretical paradigms that defines MHPSS research in the context of the climate crisis	26
1.01 Action-oriented research	Including action-oriented research to develop solutions and interventions	2
1.02 Associations rather than causal links	Understanding associations between mental health, wellbeing and climate change	1
1.03 Case studies	Including case studies	1
1.04 Causal studies	Including causal studies linking mental health, wellbeing and climate change	8
1.05 Consideration of collaboration and inclusion	Ensuring research is collaborative and inclusive	1
1.06 Evaluation of context-specific MHPSS	Ensuring MHPSS research is context specific and appropriate	1
1.07 Exploratory research	Including exploratory research	2
1.08 Antiracist and decolonial approaches	Ensuring research is antiracist and decolonial	1
1.09 Interdisciplinarity	Ensuring research is interdisciplinary	2
1.10 Intervention studies	Including intervention studies	1
1.11 Longitudinal studies	Including longitudinal studies	4
1.12 Mixed methods	Including mixed methods studies	1
1.13 Participatory studies	Including participatory studies	5
1.14 Implementation research	Including implementation research	1
Theme 2: Research exclusion	Any criteria that should be excluded from MHPSS research in the context of the climate crisis	4
2.01 Overly psychiatric perspectives	Avoiding pathologising the mental health and wellbeing responses to the climate crisis and only focusing on psychiatric perspectives	2
2.02 Pathologising	Avoiding pathologising psychological reactions such as eco-anxiety	1
2.03 Only epidemiology or service-oriented research	Avoiding only a narrow focus on epidemiology or service-oriented research that aims to scale up interventions	1
Theme 3: Research inclusion	Any criteria that should be included in MHPSS research	21
3.01 Addressing existing MHPSS evidence gaps	Addressing firstly the evidence gaps in MHPSS research in general	1
3.02 Disaggregating research (e.g. age, geography and gender)	Ensuring research is disaggregated by different categories such as age, gender, geography and ethnicity	3
3.03 Incorporating an equity lens	Ensuring research uses an equity lens	1
3.04 Incorporating a gender lens	Ensuring research uses a gender lens	1
3.05 Including the role of climate activism	Including research on the role of climate activism	1
3.06 Understanding impacts not part of typical MHPSS	Including mental health and wellbeing impacts that are not typically investigated in MHPSS research	1
3.07 Understanding intersectionalities	Understanding intersectionalities	5
3.08 Understanding climate crisis interaction with other types of crises (e.g. war, displacement)	Understanding how the climate crisis interacts with other crises	5
Research priorities	High-level theme of all the responses that identified specific research priority questions	236
Theme 1: Understanding needs and context	This theme explores questions that investigate what the mental health and wellbeing needs and context of individuals and populations are that are experiencing the climate crisis	157
1.01 Communication and community engagement	Understanding how climate change may be perceived and understood in various cultures and contexts, and how this may influence community engagement in climate change responses.	19
1.02 Identifying population needs	Identifying various population mental health and psychosocial wellbeing needs in the context of the climate crisis. It includes understanding adaptation and coping mechanisms at population level and ensuring that programming is inclusive and culturally relevant by identifying the needs of specific populations. The most frequently cited groups included children and youth, communities experiencing major impacts of the climate crisis, structurally disadvantaged groups, and refugees, migrants and internally displaced populations.	75

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**Table S1: Contd...**

Theme or subtheme	Description	Number of participants
1.03 Understanding climate change trends	Understanding what general climate change trends are at a global and regional scale	8
Subtheme 1.03a Understanding specific impacts on livelihoods and farming environments	Understanding how climate change impacts livelihoods and farming environments	5
1.04 Understanding how climate change affects wellbeing impacts and needs	Understanding how climate change affects mental health and wellbeing at multiple scales. This includes direct and indirect impacts, as well as mental health and psychosocial wellbeing adaptation and coping mechanisms.	73
Subtheme 1.04a Understanding population impact	This subtheme concerned understanding wellbeing impacts and needs at a population level, including how it relates to community resilience, community cohesion and specific communities in general (such as children and young people and other structurally disadvantaged groups)	18
Subtheme 1.04b Understanding the individual impact	This subtheme concerned individual mental health and wellbeing impacts, needs and responses, including understanding attitudes and perceptions towards the climate crisis, coping mechanisms and being sensitive to the wider social and cultural context of individuals	27
Theme 2: Designing and implementing interventions	This theme explores questions that are related to the design and implementation stage of MHPSS interventions in the context of the climate crisis	96
2.01 Adapting current MHPSS models and interventions	Understanding whether current MHPSS models and interventions need to be adapted in the context of the climate crisis, and if they do, how they should be modified	14
2.02 Developing coping and recovery interventions	Designing coping and recovery interventions	3
2.03 Developing climate change adaptation and mitigation strategies that also address mental health and wellbeing needs	Developing interventions that address mental health and wellbeing needs whilst also mitigating and/or adapting to the climate crisis	30
2.04 Identifying best practices to support individuals and communities	Identifying best practices for MHPSS responses at multiple levels	19
2.05 Identifying strategies to promote resilience	Identifying strategies to promote community resilience in the context of the climate crisis	10
2.06 Identifying strategies to promote positive wellbeing	Identifying strategies to promote positive wellbeing	12
2.07 Tackling mental health stigma	Tackling generalized mental health stigma	3
2.08 Generating an equity index	Generating an equity index to reflect country-level contributions to MHPSS support in the context of the climate crisis	1
2.09 Understanding capacity needs	Understanding MHPSS programming capacity needs and whether they are different in the context of the climate crisis	11
2.10 Understanding the role of different stakeholders	Understanding the role of different stakeholders in MHPSS responses to the climate crisis	17
Subtheme 2.10a Identifying stakeholders in MHPSS responses and exploring the role of MHPSS practitioners	Identifying specific stakeholders and evaluating the role of MHPSS practitioners in certain contexts	3
Subtheme 2.10b Centering community stakeholders in MHPSS and climate crisis responses	Ensuring community stakeholders are at the core of community level MHPSS and climate crisis responses	4
Theme 3: Evaluating interventions	This theme explores questions that were related to evaluating interventions in the context of the climate crisis	8
3.01 Evaluating multisectoral MHPSS policies	Evaluating multisectoral MHPSS policies and ensuring that MHPSS responses are incorporated across sectors, including climate change	1
3.02 Developing indicators and outcomes	Developing mental health and wellbeing indicators and outcomes that are appropriate to climate crisis and MHPSS programming	6
3.03 Evaluating the contribution of MHPSS interventions to climate change adaptation and/or mitigation	Understanding how MHPSS interventions may influence engagement in climate change adaptation and/or mitigation responses	1

*Note. The overall numbers in this table represent how many respondents mentioned each theme and subtheme. These theme and subtheme totals are not mutually exclusive.*