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Informing future directions for climate anxiety interventions: a mixed-method study of professional perspectives

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Abstract

Despite reports of increasing levels of climate change related distress, there remains limited evidence regarding effective interventions for individuals and communities. The current study aims to contribute to this discussion by presenting opinions from study participants who self-identified as having a professional interest in climate anxiety. An international interdisciplinary survey was conducted, with qualitative and quantitative responses from 230 participants, from a range of professional backgrounds, including a range of mental health practitioners, along with climate activists, artists, educators, academics and scientists and others interested in the climate anxiety space. A wide range of potential components of climate anxiety interventions were suggested by participants, including supporting people to connect with others and nature, emotional validation in a group setting, and moving toward climate action. Reflexive thematic analysis of qualitative data resulted in five themes: 'Climate anxiety is a healthy response to the current situation', 'Climate anxiety will continue to increase until there is climate action', 'Climate anxiety interventions should be individualised', 'Climate anxiety interventions need to include the community and societal level' and 'Climate-aware practitioners are required'. These themes provide a significant contribution to the discourse on climate anxiety interventions. They emphasize the need for an understanding of climate anxiety as a legitimate response to the current situation and the imperative of community and society levels being included in intervention strategies. Results from this study provide insights from diverse perspectives to provide valuable guidance for future research and practice in the development of effective interventions for climate anxiety.

Keywords Climate anxiety · Climate change · Eco-anxiety · Mental health · Psychological interventions

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Introduction

The damaging impacts of the climate emergency are becoming progressively more prevalent and there is increasing awareness, concern and research focusing on the implications of this crisis for mental health (Charlson et al., 2021; Clayton, 2020; Doherty & Clayton, 2011; Pitt et al., 2023). Climate anxiety is one of many terms emerging to describe psychological distress caused by concerns about the consequences of climate change and the environmental crisis (American Psychological Association, 2022; Clayton, 2020). The term climate anxiety was chosen for this study due to its prevalent use in both research and media discussions (Pihkala, 2020). It refers to the negative emotions people are feeling around the world in response to the climate crisis (Hickman et al., 2021; Ogunbode et al., 2022). Eco-anxiety, a similar term often, often used interchangeably with climate anxiety, refers to ecological problems more broadly, with recent research suggesting climate anxiety and eco-anxiety dimensions are closely related (Hogg et al., 2023). Given the reported correlation between eco and climate anxiety, it is likely that intervention approaches can be developed to span across both these domains.

Climate anxiety can manifest in a range of ways, most commonly as fear, anxiety, worry, grief, stress, or a sense of helplessness about the future (Ojala et al., 2021; Pihkala, 2020). There is growing evidence suggesting the number of people worried about the impacts of climate change is increasing rapidly (Clayton et al., 2017; Cunsolo et al., 2020; Hayes & Poland, 2018). For example, results from a nationally representative survey in the USA state that in December 2022, of the 70% of participants that were at least "somewhat worried" about climate change, 26% of were "alarmed" about climate change - these rates doubling from the previous ten years (Leiserowitz et al., 2022). A poll conducted in the UK reported that 85% of respondents were "concerned" about climate change, and of these, 52% were "very concerned" (Ipsos, 2020). A recent study in Australia suggests 54.7% participants experience eco-anxiety "some of the time", 9.3% "often", and 1.8% "always" (Hogg et al., 2021).

Low- and middle-income countries will disproportionately feel the impact of climate change (Pörtner et al., 2022). Moreover, research findings indicates that the mental health consequences of climate change are not distributed equally across various demographic factors and social determinants of health, such as socioeconomic status, gender, age, race, or geographic locations (Clayton et al., 2017; Hayes et al., 2018; Trombley et al., 2017). Furthermore, researchers in this area indicate populations most at risk of climate anxiety include residents and key stakeholders from areas that are either geographically vulnerable and already dealing with climate change related issues, or individuals who may be exposed due to their close connection to the natural world, including Indigenous populations (Cunsolo Willox et al., 2012, 2013a, b; Middleton et al., 2020; Ostapchuk et al., 2015), farmers (Ellis & Albrecht, 2017; Howard et al., 2020), those living in vulnerable areas such as the Pacific Island nations (Gibson et al., 2020; Tiatia et al., 2022), those engaged with climate change issue, such as climate scientists and activists, as well as young people and those with preexisting mental health

issues (Clayton & Karazsia, 2020). As the impact of climate change intensifies, the incidence of climate anxiety will continue to escalate, in particular for those in more vulnerable demographic groups. Therefore, it is becoming increasingly urgent to explore support mechanisms to identify effectives strategies to reduce distress and promote resilience among those affected by the mental health impact of climate change.

Climate anxiety interventions

A wide range of recommendations have been made regarding psychological interventions to support those experiencing climate anxiety. A systematic review conducted by Bingley et al. (2022) provides a detailed evaluation of several approaches which have emerged in the psychology and mental health literature. These researchers applied a multiple needs framework to assess the impact of interventions spanning the needs of (1) the individual experiencing climate-related distress, (2) social needs (e.g., broader societal impacts, such as interventions which may increase social connections, individual willingness to participate in groups, and social cohesion within groups),and (3) the environment (e.g., intervention which may increase pro-environmental behaviours). Table 1 summarises the results from Bingley et al. (2022).

Table 1 Multiple needs framework for climate anxiety (Bingley et al., 2022)

Intervention type	Individual level	Social level	Environmental level
Problem-focused action	Beneficial (Direct)	Beneficial (Indirect)	Beneficial (Indirect)
Emotion management	Beneficial (Direct)	Beneficial (Indirect)	Beneficial (Indirect)
Social connection	Beneficial (Direct)	Beneficial (Indirect)	Beneficial (Indirect)
Faith/religion/spirituality	Beneficial (Direct)	Beneficial (Direct)	-
Interpersonal skills	Beneficial (Indirect)	Beneficial (Indirect)	-
Non-avoidant coping	Mixed (Direct)	-	Beneficial (Direct)
Nature	Mixed (Direct)	-	Beneficial (Indirect)
Adaption	Detrimental (Direct)	-	Beneficial (Indirect)
Resilience	Beneficial (Direct)	-	-
Self-perception	Beneficial (Direct)	-	-
Reassurance	Beneficial (Direct)	-	-
Medication	Beneficial (Direct)	-	-
Psychological therapy	Beneficial (Indirect)	-	-
Role-modelling	Beneficial (Indirect)	-	-
Counselling	Beneficial (Indirect)	-	-
Creative pursuits	Beneficial (Indirect)	-	-
Education	-	-	Beneficial (Indirect)

Beneficial = beneficial outcome; Mixed = mixed outcome; Detrimental = Detrimental outcome; Direct = direct evidence; Indirect = indirect evidence; '-'= no evidence. cf:. Italics intervention types were included in both the Bingley et al. (2022) and Baudon and Jachens (2021) reviews

Results from a further scoping review conducted by Baudon and Jachens (2021) propose that psychological interventions for people experiencing eco-anxiety are occurring at both the individual and group level and focus on five themes: (1) inner resilience, (2) supporting social connection and emotional support from others, (3) encouraging climate action, (4) practitioner education and investigation into responses to climate change, and (5) connection with nature (Baudon & Jachens, 2021). The climate anxiety interventions which appeared in the results of both the Bingley et al. (2022) and the Baudon and Jachens (2021) review are problem-focused action, emotion management, social connection, nature, and resilience, shown in italics in Table 1.

Collective approaches

Both the Bingley et al. (2022) and Baudon and Jachens (2021) reviews suggest interventions for climate anxiety require a move away from individual level focus to include the broader community and natural world. These build on a system level understanding of the impact of climate change on mental health, incorporate collective support networks to build healthy relationships with others and the natural world (Patrick et al., 2022), educate about climate health and adaptation (Cunsolo Willox et al., 2012; Howard et al., 2020) and work on the chronic societal causes of climate change (Kałwak & Weihgold, 2022). System-level approaches that support communities to build social capital and emotional resilience can be more effective in addressing the mental health impact of climate change compared to those with a primary focus on individual intervention (Berry & Peel, 2015). These approaches contribute to stronger social capital, sense of community and can in turn enhance the capacity of individuals to cope with the psychological challenges posed by climate change.

Connection to nature

Connecting individuals to nature emerges as a prevalent and promising theme in recent reviews exploring climate anxiety interventions (Baudon & Jachens, 2021; Bingley et al., 2022; Harper et al., 2015; Hasbach, 2015; Hayes et al., 2018; Kelly, 2017; Koger, 2015; Koger et al., 2011). The positive impact of nature experiences, such as bushwalking, gardening and forest bathing have been highlighted in studies involving climate activists, assisting them not only to process complex climate emotions, but also to contribute to reducing the risk of burnout and despair (Curll et al., 2022; Driscoll, 2020; Godden et al., 2021). The encouraging results from this research suggest a significant potential for nature-based approaches in addressing the intersection of climate change and mental health. This aligns with a broader literature base proposing nature connection holds valuable benefits for mental health outcomes (Martin et al., 2020). The research underscores the nuance of these benefits, as different types of nature contact, and differing levels of individual nature connectedness can impact on the extent of mental health benefit (Martin et al., 2020). However, recognising thecomplexity of human-environment relationships, it is essential to acknowledge there are cultural variations in responses to nature-based

interventions (Tam & Milfont, 2020). As such, further research is required to explore the specific types of nature connection that may be most beneficial for particular populations in order to effectively support mental health in the fact of climate change (Wong & Powell, 2022). It is important to note that while nature connection may show promise, it might not be a universally appropriate approach. Some research indicates that encouraging nature connection in certain populations may be unintended consequences, such as stress and anxiety (Harper et al., 2015). Despite these considerations, some research believe that nature-based activities represent an "untapped potential for mental health" in the context of climate change (Wong & Powell, 2022). Given the potential benefits from encouraging connection with nature for mental health, it is worth considering this as an approach when supporting people impacted by climate change.

Problem-focused action

Both reviews suggest problem-focused action as a potential intervention for climate anxiety. Past research of the impact of different coping strategies for climate change conducted by Ojala (2012a, b, 2013) builds on the Transactional Stress and Coping Model (Folkman et al., 1986; Lazarus & Folkman, 1984; Park & Folkman, 1997). Regarding climate change, Ojala (2012b) suggests problem-focused coping encompasses pro-environmental behaviours to reduce personal emissions or adapt to climate change, emotion-focused coping involves strategies to manage, escape or make room for uncomfortable feelings, such as distractions, expressing emotions, talking with others, and any measures to reduce stress (Ojala, 2012b). Whereas meaning-focused coping with climate change involves strategies to reappraise the issue by focusing on progress made, the number of people working towards constructive change, the co-benefits of reducing carbon emissions, and how much knowledge exists to deal with the issue (Ojala, 2012a, b). Results suggest participants who use meaning-focused coping reported higher life satisfaction, well-being, reduced anxiety, positive feelings, higher levels of climate engagement and self-efficacy compared with those who tend to rely on emotion- and problem-focused strategies (Ojala, 2012a, b, 2013; Ojala et al., 2021; Ojala & Bengtsson, 2019). These findings are important to consider in the development and progression of climate anxiety interventions as they suggest increasing meaning-making can enhance psychological outcomes and that incorporating a combination of these different coping strategies into a climate anxiety intervention may be most effective.

Climate-aware practitioners

Regardless of the intervention modality used, there is a call for increased climate awareness amongst those working with individuals and communities experiencing climate anxiety (Gago & Sá, 2021; Patrick et al., 2022; Schwartz et al., 2022; Stanley et al., 2021). According to practitioners and researchers in this field, Climate-Aware Practitioners are climate literate and understand the issue of climate change as a determinant for mental health (Gillespie et al., 2023; Silva & Coburn, 2022). Furthermore, they validate, legitimise, and normalise

the concerns of their clients without unnecessarily eliminating them, escalating them, or reducing them to an individual pathology. These practitioners have worked towards coming to terms with the climate reality and are actively dealing with their own experiences of anxiety, grief, and loss (Lewis, 2018; Powers & Engstrom, 2020; Robbins & Moore, 2013). This aligns with a key theme discussed by Baudon and Jachens (2021) in which practitioners conduct their own self-exploration and education into climate change and mental health to reduce the potential for their own climate emotions to be inadvertently triggered during their session and acknowledge their clients' climate anxiety as evidence of connection and care for the greater world, rather than simply a personal neurosis (Baudon & Jachens, 2021). These climate-aware therapists are important as not only are they better equipped to support their clients, but they are also invaluable as co-design participants who have lived experience in experiencing and developing effective interventions. There has been a recent growth of offerings for personal and professional development in the area of climate-aware practice (see Silva, 2023). Whilst there is no research to date regarding what conditions or factors may contribute to practitioners being more likely to be climate-aware, it is likely that educational background or professional development in climate change and mental health, research, community or media exposure, client demand, as well as personal values and experience may contribute to a practitioner being more inclined to be climate aware.

Non pathologising in the intervention framework

As climate anxiety can be considered an understandable response given the climate emergency, it is important that interventions do not reduce it to an individual pathology (Bhullar et al., 2022; Feather & Williams, 2022; Patrick et al., 2022; Verplanken & Roy, 2013; Wullenkord et al., 2021). However, as some individuals are experiencing distress at levels which impair their psychosocial functioning and interfere with their daily living, in these cases targeted support and intervention may be warranted (Clayton, 2020; Searle & Gow, 2010; Taylor, 2020). However, given that the effect of climate change on mental health will disproportionately impact those who are already experiencing disadvantage, it is important that accessibility of support is considered when developing interventions.

Past research and discussions regarding the importance of non-pathologising of climate anxiety point to the utility of climate anxiety interventions using a focus on wellbeing and health orientation – called salutogensis (Antonovsky, 1996). The salutogenic paradigm can be applied to the climate anxiety discussion by exploring how individuals and communities can maintain their sense of well-being and take proactive steps to address the challenges posed by the current climate situation. This approach would consider how individuals and communities can build their coping and resilience in the face of climate change, and be empowered to participate in positive action, rather than focusing on individual pathologising.

Co-design

Given the emergent nature of climate anxiety and the necessary to not reduce it to an individual pathology, we argue there is a clear value in taking a co-design approach to climate anxiety interventions. Co-design is an iterative process involving those with lived experience and end-users actively participating in designing solutions (Blomkamp, 2018). Co-design is based on the principles that policy should be designed by people who have relevant lived experience, as people are creative and the experts in their own lives (Blomkamp, 2018). A recent review of co-design use in health settings suggests this approach can benefit practitioners, researchers, and improve the research process and outcomes (Slattery et al., 2020). Co-design approaches may work towards addressing the challenges of diversity and access to support for those who need it, and address some of the limitations of research to date in this area, which has unevenly been distributed across different languages, socio-economic and cultural populations (Pitt et al., 2023; Tam & Milfont, 2020).

The present study

People with a professional interest in climate anxiety who have lived experience of the psychological impacts of engaging with the climate crisis are in a valuable position to offer insights regarding the development of climate anxiety interventions. Furthermore, according to recent reviews of literature in this area, those likely to be interested in climate anxiety interventions extend beyond health care workers to include educators, community leaders, and environmental activists (Bingley et al., 2022). Based on such suggestions in prior research and commentary in the climate anxiety literature, the authors chose to conduct a multidisciplinary study open to any respondent who subjectively identified with the topic of climate anxiety in a professional manner. The present study aims to contribute to the literature regarding climate anxiety interventions by collecting and analysing insights from a diverse range of individuals with a self-identified professional interest in climate anxiety that are likely to have a degree of personal experience of climate anxiety themselves. When advertising for participants for this survey, we called for participation from individuals who self-identified as having a professional interest in climate anxiety, this included those working as health professionals, such as general practitioners, psychologists, counsellors, and other therapists, as well as scientists, researchers, artists, activists and educators. These results can inform the research and practice of evidence-based climate anxiety interventions. To our knowledge a survey of this type has not been conducted to date.

Method

Materials

Individuals with a self-identified professional interest in climate anxiety responded to an online mixed-method interdisciplinary international survey,

containing qualitative and quantitative questions. The survey was conducted throughout the period of November 2020 – February 2021. The authors developed a survey instrument for this study. Questions focused on features of climate anxiety, factors that can contribute to an individual's experience of it, and potential interventions. The full survey included 19 questions (9 qualitative and 10 quantitative) related to climate anxiety and climate anxiety interventions, along with 15 demographics questions. Please see Supplementary materials for the full list of questions. The current paper focuses on the six (3 qualitative and 3 quantitative) questions related to climate anxiety interventions, along with responses to the demographic questions. The results pertaining to the remaining 13 questions (7 quantitative and 6 qualitative) related to features of climate anxiety and factors which influence its occurrence are presented in a further publication (Pitt et al., 2024). The demographic questions included items such as age, profession, along with questions relating to whether they themselves engage in strategies to support themselves when experiencing climate anxiety. The four-item Six Americas Short Survey (Chryst et al., 2018) was administered to evaluate participant attitudes towards climate change regarding risk perceptions, worry, personal importance and expected harm to future generations. Each question within the survey was optional, with participants able to skip items if they felt they could not respond. Only the data from participants who completed the survey and agreed to their responses being used in the study were incorporated into the analyses. The questions asked of participants are included in the Supplementary materials.

Procedure

The Tasmanian Human Research Ethics Committee provided ethical approval for this project (20,567). The first author emailed 1080 professionals identified via searches of publications, conference proceedings and websites as having a professional interest in climate anxiety and the mental health impact of climate change. Contacts of the research team were also sent invitations via Twitter, LinkedIn, and Facebook, and participants were encouraged to share the survey in their networks. Analysis of the qualitative data was conducted using a reflexive thematic analysis process involving the examination and consideration of the researchers' assumptions, biases, and values (Braun & Clarke, 2006, 2021). This method involves six-phases of qualitative data processing - familiarisation, coding, searching for, reviewing, and naming themes, and reporting – to identify patterns and meaning in the data (Braun & Clarke, 2006). This study using a combination of inductive codes being identified as the data was read, and theory driven deductive coding which involved mapping the data to a set of pre-determined codes derived from existing literature. A coding structure was developed by the first author and discussed with the second author until consensus was reached. Frequency analysis was conducted on the quantitative data to gain insights into the prevalence and distribution of responses to these survey questions.

Results

Participant demographics

A total of 230 participants completed the survey in full, with their responses included in this analysis. Most participants identified as female ($n=154$; 70%), almost half resided in Australia ($n=113$; 49%), followed by United States of America ($n=65$; 28%) and the United Kingdom (n = 13; 6%). 70% held a master's ($n=71$) or doctoral degree ($n=80$). The majority identified as White Caucasian ($n=195$; 85%) and ages ranged from 18 to over 74 years old. A variety of professional backgrounds were represented in the sample (Table 2).

Respondents were asked, if applicable, which therapeutic approach they primarily use in their work to support people presenting with climate distress. Of the 93 who responded to this question, the most used commonly used approaches were psychodynamic/ psychoanalytical therapy ($n=18$; 19%), wilderness therapy/ bush adventure therapy ($n=13$; 14%), Cognitive Behaviour Therapy (CBT) ($n=12$; 13%), and Acceptance and Commitment Therapy (ACT) ($n=9$; 10%). Results from the Six America's Short Survey instrument indicated that the vast majority of participants fell into the 'alarmed' category of attitude towards climate change ($n=212$; 92%), meaning they believe human caused climate change is occurring and are engaged, and ready to act on the issue (Chryst et al., 2018), and are likely to have some degree of lived experience in relation to the mental health impact of climate change.

Climate anxiety interventions

Respondents were asked what they thought the main objective of a climate anxiety intervention should be. Their qualitative responses were categorised into anticipated objectives of a climate anxiety interventions that were inductively

Table 2 Participant profession category

	n	%
Psychologist/ Mental Health professional/ Counsellor/ Social Worker/Eco-psychologist	57	25%
Academic/ Researcher	49	21%
Activist/ Community Organiser/ Facilitator	27	12%
Scientist/ climate scientist	23	10%
Artist/ Writer/ Works in the Arts (including curator, journalist, and podcaster)	19	8%
G.P/ Nurse	12	5%
Teacher/ Education	8	3%
Consultant/ analyst/ Public servant	7	3%
Wilderness/ Outdoor guide/ Environmental Educator/ Conservationist	7	3%
Other: one each for: accountant, archaeologist, engineer, geographer, IT consultant, international development	6	3%
Did not respond	15	7%

coded into cognitive, emotional, and behavioural elements. The most frequently endorsed objectives are presented below (Table 3).

Participants were asked what they considered to be the most important elements of a climate anxiety intervention. The transactional model of stress and coping has been applied to how people cope with climate change (Folkman, 2008; Lazarus & Folkman, 1984; Ojala, 2012a). Given the extent of the use of this model in the literature in the climate change field, this model was used to fit suggestions of climate anxiety intervention elements into problem-, emotion-, or meaning-focused coping, linking with the aim of this study to inform future directions of research and practice in climate anxiety interventions. The most frequently endorsed elements of climate anxiety interventions are presented in Table 4.

Themes from participants which were identified across both the objectives and elements of climate anxiety interventions were: the importance of orientating climate anxiety towards climate action, not avoiding climate anxiety, rather accepting, or validating it as a valid emotion and connection to others and community.

Specific climate anxiety interventions

A range of interventions which have been discussed in the literature were presented to participants. For each of these possible interventions, they were asked to endorse whether they believed they could support, trigger, or prolong climate anxiety for an individual (Table 5).

Participants were then asked whether they engage in any strategies to deal with their own climate anxiety, with nature connection and pro-environmental behaviours reported as the top two identified supports (Table 6).

Climate anxiety interventions which appeared on both the most endorsed (Table 5) and also the most used (Table 6) as a self-identified support were nature connection, mindfulness, engaging in climate activism and pro-environmental behaviours.

Table 3 Most frequently endorsed objectives for climate anxiety interventions

Cognitive	Emotional	Behavioural
Acceptance of climate anxiety (20%)	**Reduce anxiety (19%)**	**Action (28%)**
Manage uncertainty	**Validate feelings (11%)**	**Empowerment (14%)**
Restructuring unhelpful cognitions	**Process and express emotions (11%)**	**Connection to community (13%)**
Contextualise climate anxiety	Emotional regulation	**Increased functioning (11%)**
Improve psychological flexibility	Emotional education	Resilience
Improved decision making	Find joy in living	Connection to nature

Bolded = 10% ($n = 23$) or more of participants endorsed

Table 4 Most frequently endorsed elements of climate anxiety interventions

Problem-focused coping	Emotional-focused coping	Meaning-focused coping
Action (18%)	**Connection with others (24%)**	Acceptance of the limits of their influence
Climate change education	**Not avoiding climate change or emotional responses (17%)**	Finding hopeful stories
Practical community and individual resilience skills	**Validation of emotions (13%)**	Distinguishing facts from feelings
Empowerment	Experiencing and processing emotions	Identifying unhelpful thinking
	Connection to nature	Enjoying what have now
	Acceptance	Acknowledge climate anxiety as a sign they are connected
	Pre-existing therapeutic approaches such as mindfulness, support groups, CBT, strength-based approaches	Not making assumptions about the future
	Emotional education	Acceptance of the situation
	Anxiety reduction techniques	Acknowledging change as a constant

Bolded = 10% ($n = 23$) or more of participants endorsed

Table 5 Interventions for climate anxiety

	Support %	Trigger %	Prolong %
Nature connection	**90**	33	11
Mindfulness and/or meditation practice	**84**	10	4
Engaging in climate justice activism (i.e., attending a School Strike for Climate rally, emailing a local member of parliament regarding climate change)	**86**	54	40
Engaging in pro-environmental behaviours (i.e., reducing consumption, sustainable transport choices, composting food waste)	**83**	31	19
Participating in a grief processing group	**82**	37	21
Seeing a psychologist, counsellor, or therapist	**76**	20	13
Art-making practice and/or art therapy	**76**	11	4
Participating in citizen science programs	70	38	18
Science communication	55	73	47
Engaging with news or social media	26	**89**	**75**

Presented in descending endorsement of support. Participants could choose as many options they agreed with. Bold indicates over 75% of respondents

Table 6 Self-identified supports

	Support %
Nature connection	75%
Engaging in pro-environmental behaviours (i.e., reducing consumption, sustainable transport choices, composting food waste)	70%
Engaging in climate justice activism (i.e., attending a School Strike for Climate rally, emailing a local member of parliament regarding climate change)	57%
Mindfulness and/or meditation practice	54%
Engaging with news or social media	40%
Science communication	39%
Art-making practice and/or art therapy	28%
Seeing a psychologists, counsellor, or therapist	25%
Participating in a grief processing group	20%
Participating in citizen science programs	14%
Others	48 comments

In descending endorsement of support. Participants could choose as many options they agreed with. Others included: talking with others, writing, facilitating workshops/support groups, educating others, time with pets, non-religious spiritual practice, psychedelics, working in policy, and rest

Further qualitative results

A reflexive thematic analysis of the qualitative data was conducted. The data generated by the survey revealed some diversity and commonality in the opinions regarding climate anxiety interventions. Five main themes were derived through the analysis: 'Climate anxiety is a healthy response to the current situation', 'Climate anxiety will continue to increase until there is climate action', 'Climate anxiety interventions should be individualised', 'Climate anxiety interventions need to include the community and societal level' and 'Climate-aware practitioners are required'.

Theme 1: Climate anxiety is a healthy response to the current situation

Many responses contended that climate anxiety is not a mental health disorder as it shows an understanding of the extent of climate change and is a "natural", "justifiable" and "rational response to a real threat", or a normal response to an abnormal environment. It is "a powerfully motivating response that can be harnessed", "it is important not to pathologise the experience" and "we can't get rid of it completely and, nor should we want to – it is an important source of information" and conversely "people who continue to deny climate change are the ones who need pathologising". Respondents suggested that although climate distress is not a diagnosable mental health condition and should not become one, support is warranted for those in need. However, some respondents argued that some popular psychological interventions such as cognitive behaviour therapy and pharmacological treatments may pathologise the person's experience.

These responses appreciate that climate anxiety is a normal reaction to the abnormal environmental challenge that is currently occurring. A further important perspective from this theme is that climate anxiety is not inherently negatives, as it can be a powerful and motivating response to the situation, in which individuals and communities are processing and reacting to a tangible threat. Furthermore, attempting to 'treat' climate anxiety using mental health approaches might overlook the broader society and environmental factors involved in a person's experience of it. This theme also raises the perspective of the psychological mechanisms at play for those who deny climate change, and whether this disavowal may need to be considered from a mental health perspective. A key takeaway from this theme is the need for support for those experiencing climate anxiety without unnecessarily pathologising their experience through the use of inappropriate interventions or responses.

Theme 2: Climate anxiety will continue to increase until there is climate action

Responses that aligned with this theme insisted that there will be rising climate anxiety until "meaningful change on a massive, global scale" is taken, in which governments act to "solve the climate crisis'". Respondents contended that "the only way to cure climate anxiety is to have government and big corporations make decisive, quick, and long-lasting changes", and that to address climate anxiety "you need to address the underlying problem [climate change]." This theme underscores the innate connection between climate anxiety and ongoing, under addressed climate

change. Respondents argue that addressing climate anxiety is insufficient, as it is tackling the symptom rather than the causeand imply that addressing climate change (and in turn, climate anxiety) requires a collective and substantial effort from all stakeholders, especially governments, policy makers and ongoing, meaningful international collaborations.

Theme 3: Climate anxiety interventions should be individualised

Respondents suggested that any climate anxiety intervention should be "personalised and based on individual experience". Participants reported climate distress to be complex, multifaceted, and contextualised; there is no "one-size-fits-all" intervention, and there is a perceived need to support individuals in "a way that works for them". For example, participants argued that those who have experienced an extreme weather event may be in a more post-traumatic state than those experiencing anticipatory climate anxiety or pre-trauma, however they can be related (i.e., if you have experienced an extreme weather event, you may go on to experience climate anxiety; however, you can have climate anxiety without the direct experience of a disaster). Another example in this theme was participants reporting that for some people turning their anxiety into action may be helpful, however for others it can lead to burnout, exhaustion, and denial of emotional responses, all of which are likely to increase the likelihood of further distress. This theme emphasises the complex and intricate nature of climate anxiety and the diverse experiences of those people experiencing it, which leads to the acknowledgement that interventions must be sensitive to this diversity of experience, as people and communities will be affected differently. This result suggests that respondents are calling for holistic and nuanced approaches to climate anxiety which are adaptive and accommodate a diversity coping mechanisms.

Theme 4: Climate anxiety interventions need to include the community and societal level

Responses in this theme suggested climate anxiety is a "symptom of a system which requires structural change", and therefore it is "not to be cured at individual level (rather needs attention at community, political, societal and leadership levels)". Furthermore, respondents identified that helpful interventions are likely to involve supportive community, collective spaces and action and connection to things beyond oneself (i.e., other people and nature). This theme corresponds to research suggesting using system level focus and collective approaches are more appropriate for climate anxiety than interventions which target individuals. This underscores the recognition that climate change is a collective issue, and thus addressing climate anxiety is required to be addressed as such. Collective interventions might include building community resilience and social support networks, education and awareness, cultural awareness and sensitivity and human-environment relationships, which may have more collective impact and influence on the issue of the mental health of climate change when compared to individual level intervention.

Theme 5: Climate-aware practitioners are required

Respondents placed an importance on increasing the number of practitioners working in a climate-aware manner as climate-aware practitioners may reduce the inappropriate pathologising of climate anxiety as a personal problem or dismiss emotions. It was considered vital by participants in the current study that therapeutic practitioners have engaged in reflective practice to explore their responses to climate change, "so they are aware of what they are bringing into the space" as practitioners are required to "provide perspective", "understand the science of what is happening", and "disentangle the interactions between a patient's historic psychological patterns of relating to the world and the new experiences of the climate crisis".

Three respondents specifically mentioned firsthand disenfranchising experiences seeing a mental health practitioner who was "not well versed in climate change". One reflected it was "like talking to a surgeon who doesn't understand anatomy". Another felt their practitioner was "ill prepared to deal with it [climate anxiety] … they kept thinking it was related to general work stress even though I insisted it was specific to climate", and the relief of eventually finding a practitioner "who understood and validated my anxiety, grief, and pressure due to my sense of responsibility to act". Another described that explaining their experiences, "took away the relief that therapy can provide as it put me in an educator role in the relationship [with their mental health practitioner]". The experiences of these three respondents provide useful examples of lived experience regarding the perceived importance of increasing education and awareness about climate change for mental health practitioners. As practitioners become more climate-aware it enables them to effectively intervene in this space by being more able to meet the needs of the increasing numbers of people experiencing climate related distress.

Discussion

The present study aims to contribute to the discussion regarding climate anxiety interventions, with results informing future directions of research and practice. These results will help inform the development and practice of supports for people experiencing climate anxiety. To our knowledge, a survey of this type has not been conducted to date. Participants came from a variety of professional backgrounds and most fell into the 'alarmed' category of attitude towards climate change (92%), indicating they believe human-caused climate change is occurring, are engaged, and ready to act on the issue (Chryst et al., 2018). A key finding evident in these results which relates to recent literature is the need for climate-aware practitioners (Gillespie et al., 2023; Silva & Coburn, 2022). Further, results of the current study are also consistent with findings from previous research emphasising the utility of a salutogenic (non-pathological approach) (Bhullar et al., 2022; Feather & Williams, 2022; Patrick et al., 2022; Verplanken & Roy, 2013; Wullenkord et al., 2021), connection to others for emotional expression and collective action (Patrick et al., 2022), and connection to nature (Baudon & Jachens, 2021; Bingley et al., 2022; Harper et al., 2015; Hasbach, 2015; Hayes et al., 2018; Kelly, 2017; Koger, 2015;

Koger et al., 2011). This finding is an important consideration for future research and practice regarding climate anxiety interventions.

The suggestion from the results of this study that climate anxiety interventions require climate-aware practitioners is a common theme in the literature (Baudon & Jachens, 2021). Research suggests practitioners are currently feeling under skilled in their ability to support clients experiencing distress due to the climate crisis (Silva & Coburn, 2022), and there are urgent calls for strategies to upskill health professionals to effectively respond to the rising psychological phenomenon of climate anxiety (Blackdog Institute, 2021). The results of this study suggest there can be detrimental impacts on a person experiencing climate anxiety from not having a climate-aware practitioner, which can further compound or complicate existing distress. This finding may indicate a limitation of the training and continued professional development of psychologists and mental health professionals, and whilst there are growing numbers of organisations and trainers conducting climate-aware therapy training, as evidenced by recent publications such as Silva and Coburn (2022), Gillespie et al. (2023), there remains a lack of evidence and consensus regarding what it means to be a Climate Aware Practitioner and what training is required. Furthermore, this remains niche and is yet to make it into mainstream training programs.

A theme identified in this study suggests that climate anxiety is a reasonable response to the climate crisis and does not need pathologising aligns with existing literature in this area (Bhullar et al., 2022), and emphasises that a salutogenic lens is appropriate to adopt in this context. A salutogenic paradigm focuses on identifying and promoting factors that contribute to good health and wellbeing, viewing health as dynamic and influenced by multiple factors including social, psychological, and environmental, whereas a pathogenic paradigm focuses on treating the specific disease or symptom (Antonovsky, 1996). In the climate anxiety space, a pathogenic framework may unnecessarily pathologise a rational response to the current climate crisis at the individual level, whereas a salutogenic approach would build on individual, social and environmental health, seeing the complex interplay between these factors within in a changing climate.

The finding from this survey that connection with supportive community and collective spaces for emotional expression and collective action corresponds with previous research advocating for interventions which involve a collective space for the safe expression of emotions (Baudon & Jachens, 2021). This finding is an important one to consider for potential interventions, as collective and group-based interventions have the benefit of potentially being able to support larger numbers than individual therapy, improving time and financial efficiencies and allowing for shared resources and connections. However, consideration needs to be taken to ensure groups are facilitated in a safe and supportive way, by Climate Aware Practitioners experienced in group facilitation.

The identification in this study of nature connection as a potentially important climate anxiety intervention aligns with previous research (Baudon & Jachens, 2021). Further, the finding that nature connection may have mixed results for those experiencing climate anxiety (as it may trigger or prolong climate anxiety) corresponds with the mixed evidence of the role of nature connection in climate anxiety mitigation in the Bingley et al. (2022) review. These mixed results may occur as spending

time in nature can induce stress and anxiety as individuals are confronted with the negative changes occurring in the environment, whilst on the other hand nature connection can reduce feelings of anxiety by providing hope, and restoring the nervous system (Bingley et al., 2022). The finding that nature connection may be beneficial aligns with research from environmental psychology which suggests contact with and psychological connection to nature is positively related to health, wellbeing, and pro-environmental behaviour (Martin et al., 2020). Collectively, these findings suggest that key theories of ecopsychology, ecotherapy and environmental psychology positing that nature connection and the reintegration of psychology, ecology and humans as a part of – and not apart from - nature can be a useful approach in the era of increased climate anxiety and the mental health impacts of climate change (Albrecht, 2014; Bragg, 2014; Koger, 2015; Mannarino, 2015; Randall, 2009; Robbins, 2020; Snell & Simmonds, 2012; Thoma et al., 2021).

Nature connection was identified as the intervention respondents identified as being most supportive for themselves needs to be interpreted with some caution, as although respondents have benefited from this connection, we cannot assume utility for all people experiencing climate anxiety, as it was also recognised that there is no 'one-sized-fits-all' intervention for this presentation. Given both current and previous research results indicate nature connection as a potential intervention for climate anxiety; it is pivotal that further research is conducted into how the changes in the environment from climate change will impact the relationship between nature connection and mental health (Dillman-Hasso, 2021).

The current results indicate there are several complex factors involved in developing and implementing effective interventions for climate anxiety. The findings suggest that interventions would benefit from including some, or all, of the following: facilitation by climate-aware practitioners, a salutogenic approach (i.e., not pathologising the experience), encouragement for connection to others – to express emotions and work towards collective action - and incorporating connection to nature. Depending on the individual, several interventions may be suitable, which suggests that research into a variety of climate anxiety interventions is required to build an evidence base and ensure interventions can be personalised to specific client needs. Results from this study, and from previous research, strongly suggest that there is capacity for the integration of different components of climate anxiety interventions to maximise client outcomes.

Suggestions for future research

The results of this study suggest continued research is needed to establish empirical basis for proposed climate anxiety interventions, to build valid and reliable evidence evaluating their effectiveness in supporting individuals and communities. More research regarding the efficacy and applicability of intervention approaches is required to provide practitioners and policy makers with guidelines about what constitutes best practice in this emerging area, allowing them to provide high quality effective interventions for the growing number of those experiencing distress related to climate change. We suggest future research continues to utilise a co-design

approach involving those with lived experience of climate anxiety - including practitioners and current or future end-users of climate anxiety interventions – to identify the focus and strategies of interventions through focus groups, interviews, and research trials. This study points towards the utility of community and social level supports, so we suggest this is a key focus for future research in this area, the evaluation of collective approaches, and for which populations these may, or may not be of benefit for. Furthermore, this study suggests nature connection as being a potential key area for future research into climate anxiety supports.

Results of this study also point to the need for research into defining what it means to be a Climate Aware Practitioner, and what training, support and resources are required to prepare the mental health workforce and the systems in which they are embedded for the rising numbers of people and communities whose mental health is impacted on by climate change. Research is required regarding what Climate Aware training is currently available, who is receiving it and what the outcomes are is important, along with the development and evaluation of evidence-based programs.

Strengths and limitations of the current study

A key strength of this study is the professional breadth of the participants. This diversity in expertise, backgrounds and experience allows for the incorporation of different perspectives, insights, and knowledge bases on this research topic, leading to more comprehensive, credible, and relevant findings. This diversity of participant experience and knowledge produces findings that are relevant to a broad audience interested in climate anxiety. Further this can help to mitigate the potential for selection bias which may have occurred from having a narrower participant population. Further, the participants clearly are engaged with climate change, and are likely to have a lived experience psychological response themselves, as they mostly sit in the 'alarmed' category, linking this with the concept of co-design of interventions in this area.

A further strength of this study was the incorporation of qualitative and quantitative research questions provides a rich and broad contribution of data to the conversation regarding climate anxiety interventions, which allowed for identification of themes and perspectives that would not have otherwise been captured with quantitative data, nor readily measured with qualitative data, alone. Overall, the study represents a valuable contribution to the ongoing conversation around climate anxiety and the development of appropriate supports for those experiencing it.

There are limitations in the current study. Firstly, it is suggested that caution is used in interpreting the results as it included a self-selected sample, and it is unclear what factors were influencing participant engagement. Furthermore, the views expressed by the current sample might not be representative of all populations interested in climate anxiety. For example, the generalizability of the findings to non-English speaking and diverse cultural contexts is constrained due to the exclusive focus on English-speaking professionals, the majority of whom identified as White Caucasian. This limitation becomes particularly salient when considering

the relative absence of participants from other cultural backgrounds, notably First Nations people. Further there is a gender and educational bias in the findings, as the majority of participants identified as female and help either a master's or PhD qualification. Therefore, the experiences of individuals with different educational backgrounds, socioeconomic statuses and gender identities are not adequately represented in the findings. Finally, these results do not evaluate the efficacy of any of the interventions discussed, rather provide participant opinions on which may be most effective, and do not identify which subgroups of those individuals experiencing climate distress, nor specific symptoms, may benefit from which particular interventions. Further, participants were not asked directly which interventions would not help individuals experiencing climate distress, which is an important avenue for future research in this area.

Conclusion

The present study aims to contribute to the discussion regarding climate anxiety interventions, with results informing future directions of research and practice. Results suggest climate anxiety interventions may benefit from incorporating a salutogenic (non-pathological approach), using collective approaches, climate aware practitioners and potentially involving connection to nature. Future research should focus on evaluation of these suggested interventions, and how best to equip practitioners to deliver these in a climate aware manner. Addressing climate anxiety, like climate change, requires a system wide approach, including a wide integration of diverse voices and interdisciplinary collaborations to adapt current systems of support and develop new approaches. It cannot be left to siloed clinicians, researchers, and policy makers and requires collaboration across disciplines. Therefore, the development of climate anxiety interventions is not limited to those working in an exclusively therapeutic space. Alongside the development of collective interventions for climate anxiety, immediate climate action at the large-scale, international government level is required to address climate anxiety, as climate anxiety will continue to increase in both prevalence and intensity as climate change continues (Blackdog Institute, 2021). Given the prevalence of both direct and indirect impacts from climate change on mental health are growing rapidly, psychologists and other health and mental health practitioners are calling for support in their work with individuals and communities experiencing climate change related distress (Clayton, 2020; Huxley & Lambrick, 2020; Patrick et al., 2021). The results of this study provide some future directions for research and practice regarding climate anxiety interventions.

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Kimberley Norris: Conceptualization, methodology, formal analysis, investigation, review & editing, supervision,
Gretta Pecl: Methodology, review & editing, co-supervision

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Data Availability The data that support the findings of this study are available from the corresponding author, CP, upon reasonable request.

Declarations

Ethical approval Ethical approval was obtained from the Tasmanian Social Sciences Human Research Ethics Committee (20,567). No funding was received to assist with the preparation of this manuscript.

Competing interests On behalf of all authors, the corresponding author states that there is no conflict of interest.

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