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The imperative of planetary mental health: insights, recommendations, and a call to action

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ABSTRACT

An alarming progression of human-centred and environmental concerns has marked the Anthropocene, including climatic changes and the inextricably linked deterioration of human mental health. Expanding on the 2015 *Rockefeller Foundation-Lancet Commission on Planetary Health*, we propose that mental health be explicitly included within the *planetary health approach*. This inclusion acknowledges the importance of population mental health as part of planetary health and addresses the symbiotic deterioration of global mental health and environmental health. As part of this approach, we conceptualise several types of interventions, including *symbiocentric* and *transformative mental health interventions*, with the latter combining active environmentalism with the aim of simultaneously improving mental health and wellbeing. We further identify several areas of opportunity in which transformative interventions could be translated to practice and implemented across a range of settings, including workplaces, educational contexts, and organised sport. Making a call to action, we highlight the urgency of shifting from individualised to collective environmental responsibility, including collective transformative reflection, with different stakeholders coming together to scale up transformative interventions and working towards true planetary (mental) health. Finally, we give recommendations to promote symbiocentric and transformative interventions in policy and reform.

Introduction

Growing concerns about the negative interactions between humans and the planet and their degradative effect on the natural systems that underpin the health and prosperity of human populations, have shaped the last century. The increasing extreme climatic conditions and pressure on environmental resources driven by an ever-growing population are causing significant negative consequences for human health and wellbeing (Myers, 2017; Whitmee et al., 2015). The recognition that climate change and environmental degradation are inextricably linked with human health and wellbeing (Charlson et al., 2022) has led to the examination of integrative approaches for addressing these issues – also known as nature-based solutions. These approaches have the potential to mitigate both the local and global impact of climate change and worsening health consequences (van den Bosch & Ode Sang, 2017a).

The *Rockefeller Foundation-Lancet Commission on planetary health* has proposed a planetary health approach to combat climatic changes and enhance human and environmental health (Whitmee et al., 2015). The proposed approach emerged in response to criticism of the existing health paradigm and biopsychosocial model, which fails to address the complexity of interconnections and interactions of its factors (Benning, 2015). Planetary health is hereby defined as '*interdependent vitality of all natural and anthropogenic ecosystems*' (Prescott et al., 2018, p. 1).

A planetary health approach highlights the impact of climate change, environmental degradation and loss of biodiversity on human health, acknowledging that innovative and coordinated efforts from multiple sectors are desperately needed to mitigate against these adverse effects. The approach further highlights the

importance of environmental health, which is defined as the study of environmental aspects in relation to human health, including the theory and practice of assessing and controlling these factors. This includes clean air, clean water, a stable climate and safe use of chemicals (WHO, 1995, as cited in European Environment Agency, 2024). However, despite promoting planetary health as an all-encompassing state of human and environmental health, mental health is not explicitly included in the approach as proposed by the Rockefeller Foundation – Lancet Commission. While other declarations, such as the *Canmore Declaration* (Prescott et al., 2018), include references to mental health, it is often not examined as a core and equal component of planetary health. Given the well-established interdependence and bidirectional relationship between physical health and mental health (Kolappa et al., 2013), it is apparent that the global health outcomes pursued by the existing planetary health approach cannot be achieved without the explicit inclusion of a mental health mandate.

Aims and objectives

We aim to highlight the importance of explicitly including mental health within planetary health and propose a new hierarchy of categories of mental health interventions that can equally benefit both human mental health and environmental health. We further aim to outline opportunities for the proposed intervention categories to be purposefully integrated into various area of human life and call for immediate action to address these changes.

We first address the existing mental health crisis or *anthropocentric mental burden* and introduce our proposal for including a focus on mental health in planetary health. In making this assertion, we discuss the limitations of existing nature-based interventions in relation to planetary health (i.e. *anthropocentric interventions*) and propose two additional categories of mental health interventions that encapsulate the planetary health notion. We describe these interventions as conceptual tools which are yet to be empirically validated. Finally, we discuss opportunities to integrate these interventions into different areas of human life, creating an all-encompassing conceptualisation of planetary health that fosters improved mental health while reversing the negative effects of environmental degradation (see Figure 1).

The anthropocentric mental health burden: an expanding crisis

The Anthropocene era (i.e. the commencement of human impact on the planet (Ruddiman, 2013)) illustrates one of the greatest paradoxes in human history. Although there have been vast improvements in human (physical) health due to advances in health services, a reduction in mortality rates and increased prosperity
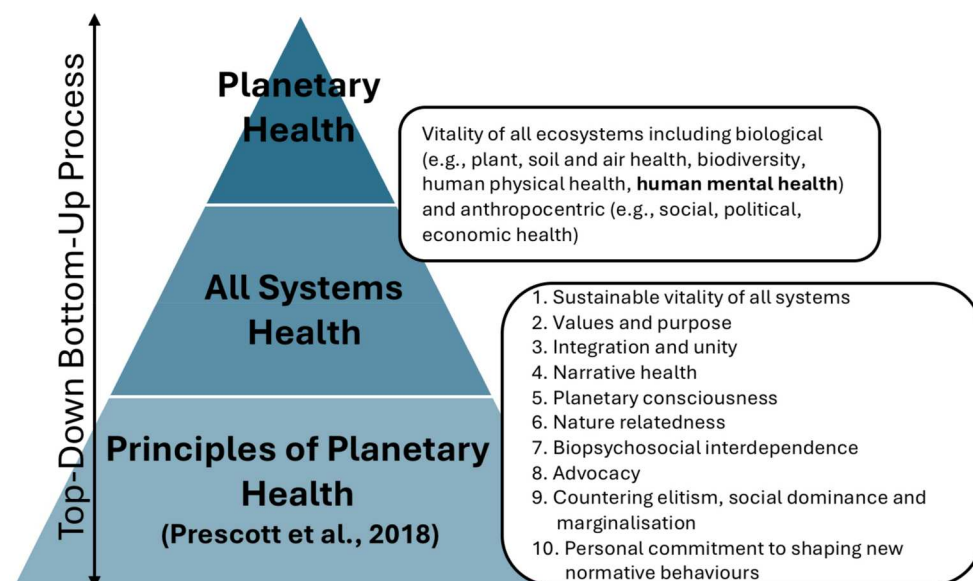

Figure 1. Embedding mental health within planetary health.

since the start of the Anthropocene, environmental health along with global mental health, have declined in this period. In parallel, existing health inequities have expanded due to the disproportionate impact of environmental concerns on disadvantaged populations (Haines et al., 2019).

Mental ill-health accounts for one tenth of the total burden of disease of the world's population (GBD 2019 Diseases and Injuries Collaborators, 2020; GBD, 2019), with approximately one in five children and adults worldwide struggling with mental health concerns (WHO, 2020) (Kessler et al., 2009; Rehm & Shield, 2019). Environmental factors contributing to the global mental health crisis, predominantly affecting disadvantaged populations, include natural disasters, rapid urbanisation and social determinants such as displacement (Patel et al., 2018). At the same time, mental health remains an 'add-on' in global health programs (Kumar et al., 2023). It is a secondary consideration to physical health, with only around 2 percent of global governmental health expenditure spent on treating and improving mental health (Fuhrer & Keyes, 2019; WHO, 2020).

There is growing recognition of the adverse effects of environmental change on mental health (Trombley et al., 2017; Whitmee et al., 2015) and the increased negative, psychoterratic responses in humans (i.e. psychological responses to changing environments) (Albrecht, 2011; Albrecht et al., 2007). These effects range from direct mental ill-health as a result of environmental change (Cianconi et al., 2020) or indirect mental ill-health as a result of environment-related physiological changes (i.e. air pollution and asthma, post-traumatic stress disorder as a result of natural disasters) (Trombley et al., 2017). The increased global awareness of these environmental stressors has been termed '*climate anxiety*' or '*eco-anxiety*' in recent years (Heeren & Asmundson, 2023).

Rising temperatures and climatic changes further impact the emergence of new zoonotic and vector-borne diseases such as SARS-CoV-2 (COVID-19), which contribute to a deterioration of existing mental health problems through social isolation, economic regression, and extreme measures such as lockdowns (Golberstein et al., 2020).

Making space for mental health in planetary health

We propose reconceptualising the existing planetary health concept to equally address global physical and mental health, with the latter being inextricably linked to environmental change. We further argue that with the existing global burden of disease and simultaneous climatic crisis, there is an opportunity to reframe recent attempts towards a global mental health agenda (Patel et al., 2018) to address both crises – climate change and the mental ill-health burden.

We further propose a hierarchy of 'planetary mental health interventions', which are organised according to the level to which they equally benefit human mental health and environmental health – '*anthropocentric, nature-based*', '*symbiocentric*' and '*transformative*' *planetary mental health interventions*'. Last, we argue for the latter subgroups (i.e. symbiocentric, transformative) to be established as an essential gold standard within all aspects of human life to mitigate the existing impact of climate change and collectively work towards a (mentally) healthier future.

Anthropocentric planetary mental health interventions: shortcomings of nature-based interventions

As proposed by us, anthropocentric planetary mental health interventions are nature-based, anthropocentric interventions that aim to increase human mental health through engagement with natural environments (including animals). These interventions stem from a plethora of evidence highlighting the benefits of exposure to the natural environment on human health (Houlden et al., 2018; van den Bosch & Ode Sang, 2017b). Like most anthropocentric interventions, interventions in this category do not entail any active measures to improve environmental health beyond the interaction with nature for the benefit of human health. Further, most interventions in this category are situated in middle – and high – income countries and thus do not mitigate against the growing gap in global health disparities.

Symbiocentric planetary mental health interventions

We propose that symbiocentric planetary mental health interventions are characterised by a purpose for reciprocal and mutual benefit to enhance both mental health and environmental health. In contrast to

the previously described anthropocentric interventions, symbiocentric planetary mental health inventions aim to go beyond using the environment to improve mental health; they are distinguished by actively incorporating a focus on positive change for the environment. As such, they are often being employed by people due to their equal co-benefits. Notably, while the impact of individual co-beneficial interventions on mental health (Ding et al., 2024), as well as mental health outcomes of climate mitigation strategies have been investigated previously (Flores et al., 2024), to our knowledge no existing research attempts have been made to systematically review co-beneficial mental health interventions which aim to equally benefit environmental systems and (human) mental health. Against this background, this section outlines exemplars of symbiocentric interventions according to our proposed definition.

Green space planetary mental health interventions

Horticulture therapy, *agroforestry* and *gardening* are examples of green-space-based, symbiocentric planetary mental health interventions. Horticulture therapy improves mental health and wellbeing among young children experiencing behavioural and emotional difficulties (Chiumento et al., 2018). The intervention aims to educate affected children on green space development and prospective planning for its future. Agroforestry is *the integration and management of trees and woody shrubs with crops and livestock* (Rosenstock et al., 2019, p. 332) has been extensively described as an active, nature-based solution to several global issues, and is believed to positively impact the mental health and welfare of vulnerable populations such as victims of forced displacement (Perkins et al., 2017). Finally, home, urban allotment and community gardening contribute to wellbeing and improved mental health across a range of different populations (Soga, Cox, et al., 2017; Soga, Gaston, et al., 2017), including the elderly (Corley et al., 2021).

Green building planetary mental health interventions

Green building practice (i.e. sustainable building practice with a focus on water efficiency, CO2 emissions, stewardship and impact of used resources) provides a cascade of protective benefits for people and places (Houghton & Castillo-Salgado, 2017). For example, sustainable design and building practices can protect against climate change-related urban flooding; flood resilience in turn leads to a reduced risk of water scarcity and waterborne diseases, a reduction in groundwater depression (i.e. maintained supply to groundwater table) and improved mental health amongst local habitants.

Active transportation planetary mental health interventions

Active transportation and the creation of 'activity-friendly living environments' such as purpose-located parks and well-built streetscapes and footpaths have been investigated as mitigation strategies to improve mental health (in addition to physical health) and promote environmental sustainability and economic benefits.

An example of symbiotic mental health interventions that has been reported in the literature was provided by Nigg and Nigg (2021), who contend that physical activities themselves can be conceptualised as sustainable behaviour within the planetary mental health approach, with cycling as an example. Cycling increases physical and mental health (WHO, 2010) and simultaneously contributes to reversing the harmful effects of environmental pollution by actively reducing CO_2 emissions.

Reducing anthropogenic frequent flying (air travel) behaviour has also been suggested as an intervention with reciprocal virtues. Apart from the disproportional global emission rates and noise pollution caused by flying (Cohen & Kantenbacher, 2019; Weaver, 2011), frequent flying has also been associated with disturbances in circadian rhythms and psycho-social relationships, a degradation in mood, exhaustion, increased feelings of anxiety, isolation, a lack of communal connectivity and loneliness (Cohen & Kantenbacher, 2019).

Dietary planetary mental health interventions

Another subcategory of symbiocentric mental health interventions are dietary interventions. Diet quality has been closely associated with several mental health conditions, such as stress, anxiety and depression, which are among the leading global mental health concerns (Daneshzad et al., 2020; WHO, 2022). For instance,

increased intake of vegetables and grains has been associated with decreased inflammatory markers (Baden et al., 2020; Daneshzad et al., 2020).

Transformative planetary mental health interventions

As a third category of human-environment interventions we conceptualise *transformative* ('*niche*') planetary mental health interventions. We define this category as stronger form of symbiotic interventions which provide equal benefits to both human mental health and environmental health via engagement in transformative environmental actions, i.e. activities designed to protect the environment, raise public awareness to environmental concerns and articulate a vision of proactive environmental change (for further information transformative action, see also *Center for Transformative Action*, *2025*; and Whitmee et al., 2015). Transformative mental health interventions are characterised by their highly interwoven and interdependent nature. In comparison to the former category of *symbiocentric* interventions, these interventions require (voluntary or non-established) commitment/ engagement in environment-focused actions in addition to established professional roles. Examples include *plogging*, *green kayaking*, *recycling therapy* as well as *upcycling*.

Plogging, derived from the Swedish words for *jogging* and *picking up* (i.e. merging Swedish verbs plocka upp (pick up) and jogga (jog)), describes the act of collecting litter while going jogging. The behavioural intervention originated as a reaction to the profusion of waste and litter thrown into nature by humans every day, however, was soon recognised for the (physical and mental) benefit of engaging in transformative environmental action whilst keeping oneself healthy (United Nations Environment Assembly, 2018). Another potential transformative planetary mental health intervention is *green kayaking*, established by a Danish NGO that provides community kayaks for water-based rubbish collection (see also www.greenkayak.org).

Another illustration of the proposed concept of transformative planetary mental health interventions is '*recycling therapy*' and the act of upcycling. Upcycling, which describes the creative reuse of discarded waste materials, is reported to reconnect people with materials, decelerate resource consumption (Niinimäki et al., 2021) and foster creativity (Bridgens et al., 2018). Recycling in turn has been described as highly beneficial for older adults' mental wellbeing by drawing upon the interconnectedness of humanity, their environment and sustainable lifestyles (Hsiao & Hagedorn, 2019). It further strengthens social connections, generates income, and improves wellbeing in individuals of low socioeconomic status (Kantorski et al., 2009).

Other environmental enhancement activities which could be considered *transformative planetary mental health interventions* include tree-planting (Husk et al., 2016), environmental volunteering (Patrick et al., 2022), watershed restoration, re-greening of urban waste-sites, habitat restoration, and decontamination of communal green space. Among the reported benefits of environmental engagement are increased physical activity, improved mental health, enhanced social connections within communities, stress relief, and positive experiences related to an individual's social personal identity.

While several interventions within the proposed category of transformative planetary mental health interventions exist, the majority have not been scientifically investigated for their symbiocentric potential or their ability to equally enhance mental health and achieve transformative environmental change. Further, existing scientific solutions largely fail to translate into effective policy and practice for sustainable development. Additionally, there is a lack of consensus on methods for measuring co-beneficial outcomes of interventions (Dinh et al., 2024). Consequently, fundamental research is needed to investigate these novel interventions and their potential to increase mental wellbeing while simultaneously reducing the anthropocentric environmental impact, as well as establish validated measurements to assess the cobeneficial impact of such interventions. For a comparison of all three intervention categories see Figure 2.

Opportunities, solutions, and future directions for planetary mental health interventions

Symbiocentric and transformative interventions respond to the recently identified priority research area of *mental health benefits of climate action* within the Global Research and Action Agenda for Climate Change and Mental Health (Lawrence et al., 2023). The agenda further highlights the importance of political and policymaking environments that enable integrated climate and mental health practices as key drivers of the proposed vision (Lawrence et al., 2023).
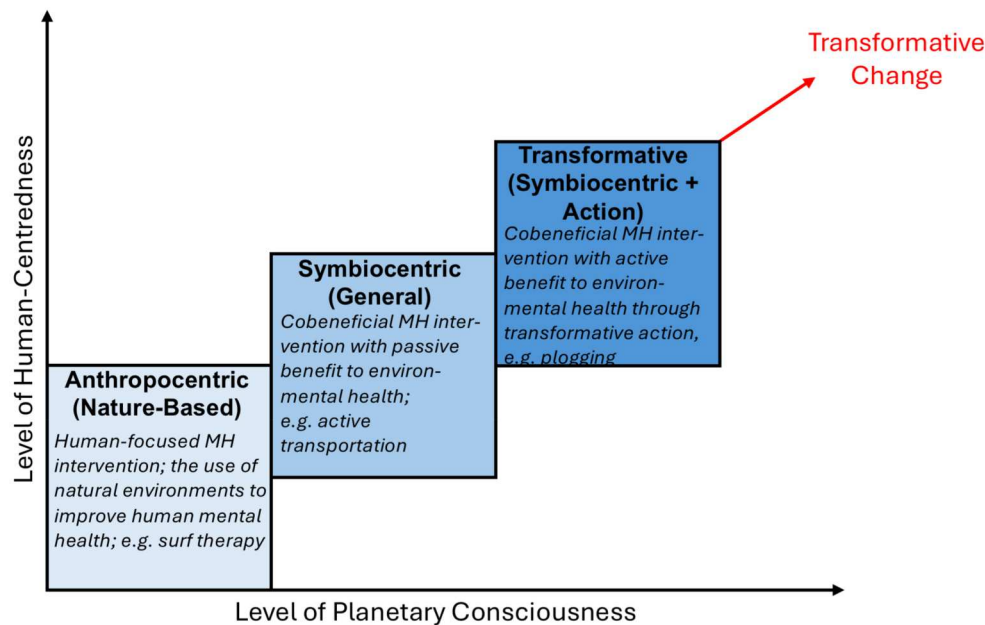
Figure 2. Transformative change in planetary mental health interventions.

The proposed category of intervention aligns with and builds on the *Statement of Planetary Health* by the Canmore Declaration of Planetary Health (Prescott et al., 2018) which highlights 10 principles as the basis of planetary health: sustainable vitality of all systems; values and purpose; integration and unity; narrative health; planetary consciousness; nature relatedness; biopsychosocial interdependence; advocacy; countering elitism, social dominance and marginalisation; and personal commitment to shaping new normative behaviours.

In line with the Global Research and Action Agenda for Climate Change and Mental Health and the Canmore Declaration, we identified several opportunities within these symbiocentric and transformative planetary mental health interventions to advance the understanding, promotion and facilitation of planetary mental health:

- Integration and upscaling of symbiocentric (co-beneficial) interventions in cities:

We propose opportunities for the integration and upscaling of various types of symbiocentric (and transformative) interventions based on existing evidence highlighting the positive impact of changes to the built environment and human behaviour on planetary and human (mental) health. In our opinion, changes to the built environment are inextricably linked to behavioural symbiocentric interventions, as implementation of many symbiocentric interventions depends on the facilitation of appropriate space and resources. Opportunities for co-beneficial interventions in the built environment were identified by Younger et al. (2008), who proposed an increased provision of community gardens and farmers markets, the development of mixed-use communities, safe school routes to encourage physical activity such as cycling, the preservation of parks and green-space, and the encouragement of urban gardening.

However, in line with Bambrick et al. (2011), we argue that integration and upscaling of symbiocentric interventions may only be realised if cities provide the relevant space and infrastructure. In addition, we believe that community involvement (i.e. co-creation and co-development of urban (green) space) is essential to achieve and sustain mental health benefits and increase the use of urban space, for instance, involvement of citizens in large-scale urban forest stewardship action (Moskell & Allred, 2013; Nguyen et al., 2024).

- Educational opportunities:

Educating and empowering younger generations on the importance of planetary health underpins a niche opportunity for a planetary mental health intervention. Ariyadasa (2017) adopted a participatory

action research model to engage and educate children on the impacts of modern living. Children were encouraged to translate policy into practice by applying small-scale interventions such recycling, resource re-use, ethical farming and composting. The applied ecosystem governance practices aimed to promote a harmonious coexistence of humanity and nature, as well as to empower and improve the wellbeing of the participating children (Ariyadasa, 2017).

- Collective environmental action:

We identified an opportunity within a shift from individual behaviour to collective behaviour to increase community action and mental wellbeing. As reported by Aarnio-Linnanvuori (2019), individualisation of environmental responsibility leads to increased feelings of powerlessness and increased perceptions of narrow possibilities in youth; whereas, active encouragement of collective environmental responsibilities can drive youth participation and action, leading to a greater feeling of empowerment.

It is important to recognise that there is some evidence of a negative impact of transformative environmental action on individuals, including denial or suppression of painful emotions amongst climate scientists (Head & Harada, 2017), *activist burnout* (Gerber, 2023) and adultification of young people involved in environmental action (Benoit et al., 2022). We believe these negative consequences are likely to be associated with individuals absorbing the responsibility for global change upon themselves, rather than seeking a collective responsibility for this change. Indeed, Schwartz et al. (2023) have recently demonstrated that collective, not individual, environmental action may act as a buffer for major depressive disorder.

- Workplace interventions:

Opportunity lies in the integration and implementation of symbiocentric and interventions, such as plogging, at workplaces to promote collective empowerment, enhance social connectivity and mitigate the effects of planetary ill-health. Such integration is beneficial particularly for occupations which are strongly affected by environmental degradation and climate change, including: health providers, who are required to recognise climate change-related (mental) health effects (Dupraz & Burnand, 2021); teachers, who are expected to educate on climate change (Paşcalău et al., 2021); and outdoor workers, who are exposed to climate change impacts in their work environment (Moda et al., 2019). Reduced mental wellbeing in turn has been shown to negatively affect workplace productivity, reduce work capacity, compliance and workplace satisfaction and increase work injuries (Brooks & Greenberg, 2023).

- Opportunities within organised sport and sporting events:

Organised sport (participating in or attending sporting events) has a well-researched evidence base for providing a range of mental health benefits, such as increased life satisfaction and subjective wellbeing (Keyes et al., 2022). However, large-scale sporting events have been shown to significantly contribute to global CO_2 emissions and thus increase the global carbon footprint. While sporting organisations are taking an increasingly active stance as part of environmental discussions, many opportunities to facilitate and implement symbiocentric planetary mental health interventions as part of organised sport have not yet been explored.

Based on the bidirectional relationship between sports and the natural environment highlighting the importance of planetary health to facilitate sport engagement (Reid et al., 2024), we propose mitigation strategies (i.e. symbiocentric interventions) such as active community involvement through advisory groups and volunteering activities can contribute to joint solutions to minimise the environmental impact (e.g. mitigating effects on native wildlife). In turn, community involvement, participation, and volunteering (Jenkinson et al., 2013) have been shown to positively impact subjective well-being (Evans, 2008).

- Opportunities for increased health equity:

As discussed by Prescott et al. (2018), working towards true planetary mental health requires a reduction in global health disparities and active countering of elitism, social dominance and

marginalisation. It further requires a mutual commitment to shaping new normative behaviours to equally work towards planetary health in low- and middle-income countries, which are often disproportionally affected by environmental ill-health. Contrary to many existing anthropocentric mental health interventions, i.e. nature-based interventions, transformative planetary health interventions hold a particular opportunity for implementation in low-income settings and thus improving mental health while empowering individuals to be agents of change. For instance, recycling therapy or upcycling improves wellbeing in individuals of low socioeconomic status, generates income (Kantorski et al., 2009), in addition to positive environmental benefits.

- Policy integration for effective implementation:

Opportunities exist to integrate symbiocentric interventions in different areas of human life including education, housing, work life, leisure time activities, and the built environment. However, to achieve implementation of the conceptualised planetary mental health interventions, consideration of the proposed interventions as part of governmental decision-making must first be facilitated through mechanisms that support cross-sector coordination, action and alignment. Concepts and approaches like 'joined-up government' or 'whole of government' approach (Christensen & Lægreid, 2007; Perri, 2004) and horizontal and vertical coordination between and across sectors support the policy integration needed to implement planetary health interventions (Christensen & Lægreid, 2007; Greenway, 2021). Learnings from these approaches and those gained from Health in All Policies could inform integrated policies that seek to achieve multiple cross-sector aims (Baum et al., 2022; Global Network for Health in All Policies & Government of South Australia, 2019; Kokkinen et al., 2019; van Eyk et al., 2017).

Putting the 'mental health' in planetary health: A call to action

We make several recommendations to highlight the urgency of integrating mental health as part of planetary health and scaling up symbiocentric and transformative interventions to increase planetary health. Importantly, these recommendations require a fundamental understanding of planetary health; collective, transformative reflection on the inseparable role of mental health within planetary health; the interdependent nature of planetary and mental health; as well as the anthropocentric nature of existing mental health interventions. They further depend on a humankind's reflection on kindness, responsibility, mutualism, a commitment to self-awareness, critical consciousness and a collective commitment to shape new normative behaviours (for fundamental planetary health principles see Prescott et al., 2018).

Our recommendations include:

1. Increased access and subsidised equipment:

We call on local governing entities (i.e. councils and local government areas) to subsidise equipment for the upscaling of transformative interventions and to facilitate community access to equipment. For instance, council-led upscaling of initiatives such as GreenKayak.

2. Increased provision of space and infrastructure:

We urge local governing entities to plan for and provide increased space and infrastructure to integrate symbiocentric and transformative interventions in urban communities, and to facilitate upscaling of urban gardening and green space development. Increased space and infrastructure for green space development is expected to increase mental health and physical activity engagement, that will consequently reduce both the planetary mental health burden and the existing economic burden of mental ill-health.

3. Expansion of research priorities:

We recommend an expansion of global research priorities within the area of planetary health to equally consider mental and physical health, with specific focus on researching symbiocentric and transformative

planetary mental health interventions. We further recommend the application of a systems-thinking approach (as suggested by Pongsiri et al., 2017) to develop symbiocentric interventions across environmental, societal, and economic systems and evaluate their impact. Further, we believe that investigating transformative interdependent interventions has the potential to contribute to health equity and 'universal prevention', i.e. maintaining mental health.

Notably, as part of this research priority it is equally imperative to establish consensus on appropriate measurement methods to assess the impact of such interventions (Abdala et al., 2024; Dinh et al., 2024).

4. Dissemination and translation of knowledge:

We recommend increased knowledge translation and dissemination of the conceptualised transformative interventions for timely consideration and 'prescription' of such interventions as part of public health services (i.e. mental health professionals) and to mitigate negative effects of environmental degradation particularly on younger populations.

5. A shift to societal responsibility:

We advocate for collective, societal action in place of individualised responsibility to work towards planetary (mental) health. As has been pointed out previously, the Anthropocene is characterised by corporate power taking precedence over planetary health (Sula-Raxhimi et al., 2019), with only limited accountability attributed to organisations, businesses, and corporations. Increased societal pressure on economic systems (including organisations, businesses and corporations) is essential to counter the detrimental effects of corporate power. Collective environmental responsibility and action across multiple sectors may also increase funding opportunities for symbiocentric and transformative planetary mental health interventions.

6. Stakeholder involvement:

We recommend the application of a socioecological framework to planetary ill-(mental) health (see also Petrosillo et al., 2015). Key stakeholders must come together to provide opportunities for symbiocentric and transformative interventions. These include but are not limited to individuals, communities, educational institutions, sporting organisations, councils, corporations, institutions, leaders, mental health professionals and governments.

7. Guidance for public policy development:

We strongly suggest public policy development based on transformative planetary mental health interventions. We see potential in interventions that involve planetary health and physical activity, as physical activity has been associated with increased green space use, improved mental wellbeing, and increased adoption of pro-environmental behaviour in the past (Mitchell, 2013; Teixeira et al., 2023).

8. Education policy reform:

We recommend a reformation of education policy to expand existing curricula to address and educate on contemporary matters such as planetary health (see also Stone et al., 2018) and globalisation. We believe that integration of planetary health-focused curricula will contribute to increased environmental awareness and collective environmental responsibility at an early age and promote universal prevention and mitigation of the negative effects of environmental degradation on mental health.

Conclusion

With the alarming progression of both human-centred and environmental concerns in the last few decades, including climactic changes and the inextricably linked deterioration of human mental health (Charlson et al., 2022; Hwong et al., 2022), we have proposed that mental health be addressed equally with physical

health in the *planetary health approach* (Whitmee et al., 2015). This concept explicitly acknowledges the importance of population mental health as part of planetary health and addresses the ongoing deterioration of global mental health associated with the decline of environmental health. As part of this approach, we conceptualised several types of planetary mental health interventions, including *symbiocentric* and *transformative mental health interventions*, with the latter combining active environmentalism with simultaneous improvement in mental health and wellbeing. Further, we identified several opportunities and areas in which transformative interventions could be translated to practice, implemented, and scaled up, including workplaces, educational contexts, and organised sport. Lastly, we made a call to action, highlighting the urgency of shifting from individualised to collective environmental responsibility to work towards planetary health. For this, various stakeholders were identified, including individuals, communities, organisations, businesses, corporations and all levels of governments, which need to come together to scale up transformative planetary mental health interventions and work towards an all-encompassing approach to planetary health.

Disclosure statement

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