# 2022 ANNUAL REVIEW

# Regimen

## STRIVING FOR GLOBAL HEALTH

strive
student health initiative inc.

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# Introduction

## *Welcome to Strive's annual publication collating articles from 2022.*

During 2022, we continued publishing Strive's periodical student publication, *Regimen: Striving for Global Health*. Our publication aims to promote social change and empower readers with knowledge and awareness to make a global public health impact.

This annual edition of *Regimen* includes Editions Five and Six which contain a number of articles from a range of Strive voices. Our articles have covered several important public health issues such as Indigenous health and how we can address Indigenous health inequities, student mental wellbeing, the impacts of climate change on health, and the health effects of vapes.

I would like to thank our Publications team including Sean Flintoft and Amin Abedini as well as our graphic design officers, Sonia Truong and Ka Weng Ng. I would also like to thank our Strive members and our Strive executive team for contributing and collaborating on this publication.

We hope you enjoy reading *Regimen* and that you are inspired to find your own public health interests where you can take action!

Warm regards,

**Laura Kalitsis**
2023 Publications Project Manager

# Regimen

STRIVING FOR GLOBAL HEALTH

Edition 5 · March 2022

"Indigenous women in remote communities are required to travel to larger centres for maternity care, causing isolation and dislocation from their communities."

## ADDRESSING MATERNAL HEALTH INEQUALITIES IN AUSTRALIA

BRIANNA HEINKEN

Indigenous women in Australia experience serious inequalities in maternal health compared to non-Indigenous women. Brianna examines these existing health inequalities and highlights several key actions needed to address them.

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LAURA KALITSIS

University students are increasingly vulnerable to mental health issues such as depression, stress, and anxiety. In this article, Laura explores student mental health, academic burnout, and the strategies we can implement to support our mental wellbeing.

## WHY YOU SHOULD TAKE A TRIP BACK TO THE MELBOURNE MUSEUM

SEAN FLINTOFT

Sean shares the insights that he gains from his visit to the Bunjilaka Aboriginal Cultural Centre at the Melbourne Museum. He reflects on how this experience transformed his understanding of First People's history and the way he acknowledges Country.

# Why you should take a trip back to the Melbourne Museum


*By* ***Sean Flintoft*** Publications Project Manager

Sean shares the insights that he gains from his visit to the Bunjilaka Aboriginal Cultural Centre at the Melbourne Museum. He reflects on how this experience transformed his understanding of First People's history and the way he acknowledges Country.

How many times have you heard the following statement:

*"I would like to acknowledge the Wurundjeri people who are the Traditional Custodians of this Land. I would also like to pay respect to the Elders both past and present of the Kulin Nation and extend that respect to other First Nations peoples present."*

If you haven't heard this or any of its variations yet, you certainly will. This Acknowledgement of Country is a key step that The University of Melbourne and many other organisations are taking to move this country in the right direction. As you progress through your education, you too will speak these words and champion the cause. However, I recently had the pleasure of learning that, for many years, the respect I had hoped to communicate through my use of this phrase was being lost in translation. You may be making the same mistake too.

The Melbourne Museum currently has an exhibition within the Bunjilaka Aboriginal Cultural Centre. It is named First Peoples, and it has been designed by the First Peoples Yulendj Group of Elders and community representatives. This exhibition provides its visitors with a raw and beautiful recount of Aboriginal culture and history, aiming to help museum goers understand what is often left out of traditional Victorian education. I was among a group lucky enough to be invited to the First Peoples Exhibition, to tour it and to speak with some of the First Peoples Yulendj Group of Elders who designed it. Here is the moment I was shown my error:

We sat in a circle. Our eyes were met by the kind gaze of an Elder. They asked us each where we grew up. I had previously been told that the area in which I grew up was actually Bunurong Country, so when it was my turn, I told the Elder: "Hello! My name is Sean, and I grew up in Hampton, which I believe is Bunurong Country!".

***"Okay, tell me about Bunurong Country" the Elder said.***

I was stumped. As was everyone else that told the Elder what country they grew up on. The Elder then went on to implore us to learn about the country we live on, and to learn about the history of its people. That way, when we acknowledge country, we can do so from a place of deeper understanding and appreciation. That way, we can really express our respect for the opportunity to be where we are.

I am grateful to this Elder for showing me that identifying the traditional name of the land I inhabit is a good first step, but learning about it is the next. Naturally, the next question that was asked of this Elder was: "Can you recommend any good resources to begin deepening our understanding of First Nations people, land and history?".

Despite our ineptitude, we couldn't help but chuckle when the Elder replied with "Google."

Amusing as it was, they were only half joking. Many of us do not take the time to google our questions about First Nations history, despite agreeing that it is a good thing to do. There are many valuable online resources that we can use to deepen our understanding about the land we live on, and with the diversity of the many First Nations communities and countries that exist around us, it is difficult to recommend any one resource. However, the Elder did have some more specific suggestions for Victorians. Here they are:

*Online resources about First Nations Histories in Victoria*

1. The First Peoples Exhibition at the Melbourne Museum
2. Dark Emu, an eye-opening book by Bruce Pascoe

Both these resources provide an overview of the history and culture of First Nations communities within Victoria that you can use as a starting point. From there, deepen your understanding by searching the web for answers to the questions you discover. You may be surprised by how easy it is to find them.

While we're on the topic of searching the web for answers, I would like to remind you that if you can't make it down to the Melbourne Museum, perhaps due to the pandemic that shall not be named, you can always take an online tour of the First Peoples Exhibition. It is an incredible way to better your understanding of the place you call home, and to ensure that you don't make the same mistake as I.
I wish you luck on your journey of understanding and discovery. Stay safe and best of luck for the year ahead.

*Sincerely,*
*Sean.*
*Writing from Bunurong Country, down along Nairm.*

# Addressing maternal health inequalities in Australia

*By Brianna Heinken*
Community Engagement Director

Indigenous women in Australia experience serious inequalities in maternal health compared to non-Indigenous women. Brianna examines these existing health inequalities and highlights several key actions needed to address them.

Australia is one of the safest places in the world to give birth. In fact, Australia consistently ranks in the top 10 countries to be a mother world-wide [1]. However, despite the safety of being a mother in Australia, recent data has shown that the maternal mortality rate for Indigenous women remains a concern.

A maternal death is defined as the death of a woman while pregnant or within 42 days of the end of pregnancy [2]. Maternal deaths are divided into two categories: direct and indirect. Direct maternal deaths are caused from obstetric complications of pregnancy. Indirect maternal deaths are caused from diseases or conditions that were not due to an obstetric cause, but were aggravated by the physiologic effects of pregnancy. The number of direct and indirect deaths each year are used to calculate Maternal Mortality Rate (MMR), which is the rate of maternal deaths per 100,000 women giving birth.

The Australian Institute of Health and Welfare (AIHW )reported that the MMR for non-Indigenous women was 5.5 per 100,000 women giving birth between 2012 and 20193. The report also revealed that Indigenous women are dying from pregnancy complications at a much higher rate, with an MMR of 17.5 per 100,000 women giving birth in the same period [3]. These poorer health outcomes can be attributed to a wide range of risk factors, including a higher rate of substance abuse among Indigenous women and difficulty accessing health services.

The Australian Institute of Health and Welfare (AIHW) reported that the MMR for non-Indigenous women was 5.5 per 100,000 women giving birth between 2012 and 20193. The report also revealed that Indigenous women are dying from pregnancy complications at a much higher rate, with an MMR of 17.5 per 100,000 women giving birth in the same period [3]. These poorer health outcomes can be attributed to a wide range of risk factors, including a higher rate of substance abuse among Indigenous women and difficulty accessing health services.

## How do we get here?

Substance abuse during pregnancy, including smoking, harmful use of alcohol, and drug abuse are all associated with poor birth outcomes. Smoking and drug abuse during pregnancy causes major developmental disorders in babies and labour complications for the mother. Harmful use of alcohol during pregnancy causes abnormal development and increased risk of Sudden Infant Death Syndrome (SIDS) [4]. Substance abuse behaviours are more common among Indigenous women than non-Indigenous women, which must be understood as a result of displacement from traditional lands, limited education, economic disadvantage, marginalisation, and other associated losses. For example, about half of all pregnant Indigenous women smoke during pregnancy, compared to one eighth of non-Indigenous pregnant smokers [5]. High rates of smoking, alcohol abuse, and drug use are contributing factors that make Indigenous women more susceptible to pregnancy complications than non-Indigenous women and helps explain the higher Indigenous MMR.

In addition, Indigenous women are less likely to access prenatal care during the first trimester of pregnancy, a time when many risk factors can be addressed. About half of Indigenous women accessed prenatal care at some point in their pregnancy, compared to the national average of two thirds of pregnant women [6]. In addition, compared with non-Indigenous women, access generally occurred later in the pregnancy and less frequently. Without the early intervention of medicine, Indigenous women have a higher risk of pregnancy complications and maternal death.

Most importantly, Indigeous women face a number of barriers to accessing health services, including cost, distance from services, and culturally unsafe healthcare providers. Access to maternity health services varies between remote and non-remote areas, with cost being a more significant issue in urban Indigenous communities and distance being more significant in remote areas[6]. Indigenous women in remote communities are required to travel to larger centres for maternity care, causing isolation and dislocation from their communities. This travel is also associated with inappropriate accommodation for women while in towns and lost wages if a partner has to stop working to care for the family. In addition, culturally unsafe healthcare providers can intentionally or unintentionally diminish the cultural identity and wellbeing of an individual, making them feel unsafe and rejected.

## Where to from here?

In order to improve the MMR in Indigenous communities, it is important to recognize that the birthing experience of Aboriginal and Torres Strait Islander women is culturally different from that of non-Indigenous women. In many communities, birthing continues to be a cultural rite of passage where links are established to land, connections with country are celebrated, and knowledge is passed from older to younger women. Many Indigenous communities have specific birthing rituals and desire to give birth on country, rather than travel to metropolitan settings. Improving access to culturally sensitive health professionals in Indigenous communities is an important step to decrease maternal deaths among Indigeous women. Indigenous women often desire access to safe and high quality care in their own community and are more likely to access services that are provided in culturally-safe places. It is important to recognize the importance of culture and country for Indigenous women, and work with cultural leaders to create successful birthing programs.

Pilot programs across Australia have focused on midwives and Aboriginal Health Care workers, which provide culturally-appropriate care in community-based settings. The New Direction Mother and Babies Service is an example of an initiative being piloted for Indigenous families in areas of high risk [7]. This program, funded by the Federal Government, aims to increase access to, and use of, child and maternal healthcare services for Aboriginal and Torres Strait Islander families in three remote communities. If successful in its trial, it is important that this program is expanded to other remote communities throughout Australia.

Increasing the use of midwives providing care throughout a pregnancy and after birth in remote areas is also an important strategy to decrease maternal deaths among Indigenous women. An example of this is the Malabar Community Link Service, which offers midwifery care for women during pregnancy, labour, and six weeks after birth [7]. This service cares for Aboriginal women and their families, women from culturally diverse backgrounds, young mothers, and women with limited resources. So far, results from this program consistently show decreased use of medically-necessary interventions for women who received midwife-led care compared to women who received other models of care.

Although recent data about maternal mortality in Australia remains concerning, we are equipped with the tools to improve health outcomes and birthing experiences nation-wide. In coming years, it will be crucial to incorporate culturally-safe healthcare services, especially in remote communities, to increase access to medical care and decrease the maternal mortality rates in Indigenous communities.

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# Student mental health: Beating burnout

University students are increasingly vulnerable to mental health issues such as depression, stress, and anxiety. In this article, Laura explores student mental health, academic burnout, and the strategies we can implement to support our mental wellbeing.

*By Laura Kalitsis*

Publications Officer

The mental health status of university students is a growing public health concern. Students in the higher education system are susceptible to mental health struggles. Rates of mental illness, such as anxiety and depression, as well as states of emotional exhaustion and burnout are greater in the student population compared to the general population. Despite the recognition of the stressors that university students face, prevention and treatment of the consequential mental health struggles remain unclear and inadequate.

## An introduction to student mental health

According to the World Mental Health Survey conducted by the World Health Organisation (WHO) [1], university students have a significantly higher proportion of mental health illnesses compared to the general population. Students participating in this survey were screened for six different mental health conditions (major depression, generalised anxiety disorder, panic disorder, mania/hypomania, alcohol use disorder and substance use disorder). Results from this survey indicate that 35% of students suffer from a mental health condition. Similarly, the National Youth Mental Health Foundation conducted a National Student Wellbeing Survey in collaboration with Headspace [2]. This questionnaire investigated the impact of academic, financial, transitional and health stressors on the university experience of Australian students. It was observed that 65% of students reported high or very high psychological distress during the academic year and 67% of students rated their mental health as fair or poor at times.

The results of both studies clearly show that whilst the student experience is an exciting and growth inducing phase of life, instability and stress accompany it. Navigating the transition to independence introduces financial and housing instabilities. Exploring one's identity may lead to changes in social groups and relationships. Selecting courses and careers is a daunting process that many students find distressing. There are also several academic stressors such as meeting high-stake assessment deadlines, understanding large content loads and inadequate academic support. Although such experiences are important learning opportunities, the associated stress is a causative factor of mental health struggles in the student population [3].

The impact of COVID-19 has only heightened stress and mental health challenges faced by students [4]. The necessary lockdown policies induced feelings of isolation and loneliness as social activities came to a halt. Academic teaching moved to online modes and many internships and work experience opportunities were cancelled. Additionally, loss of jobs enhanced financial distress and created difficulties for students to meet accommodation and tuition fees.

## What is burnout?

Psychologists describe burnout as a state of mental and physical exhaustion5. Currently, burnout is not recognised as a diagnosis as it is not listed in the Diagnostic and Statistical Manual of Mental Disorders (DSM) [6]. Therefore, it is difficult to develop treatment plans and management guidelines. Furthermore, this lack of a formal diagnosis creates challenges in understanding the prevalence and distribution of burnout among students. To assist in it's recognition, burnout can be broken down into three components: emotional exhaustion, depersonalisation and reduced sense of personal accomplishment [7]. Emotional exhaustion is characterised by physical and psychological symptoms of fatigue and feeling depleted from academics or work. Depersonalisation is the feeling of detachment from oneself, as if one is watching their life from the outside. Lastly, reduced sense of accomplishment describes a lack of internal motivation and reduced satisfaction from study or work.

Stress is both a predictive factor and an indicator of burnout. Due to increased levels of instability and psychological distress associated with the university experience, students are at risk of developing burnout during their academic years [7]. Academic burnout has a plethora of consequences. Students working with burnout are less effective in academic and professional settings [7]. Additionally, failure, absenteeism and dropout rates are higher in chronically stressed or burnout students [7]. Burnout increases the risk of future mental health problems such as depression, substance abuse, suicide and suicidal thoughts [7].

## Preventing and treating burnout

Both the management and treatment of burnout currently remain unclear. However, there are several strategies students can implement to prevent burnout. Motivation is a force that drives learning and sustains behaviours towards a particular goal [8]. For students, it can be difficult to recognise and find motivation, making academic tasks and deadlines more daunting and stressful than they should be. Therefore, it is important for students to reflect and identify what is motivating their academic study. Intrinsic motivation is an internal drive to study or work because of one's inherent interest in the course content and their future career [9]. Whilst it can be challenging to find intrinsic motivation, studying with intention is associated with higher levels of accomplishment [10].

Developing stress management techniques is vital in preventing burnout during the academic year. Self-care strategies vary from student to student, but it is important that students implement such techniques within their routines. Meditation is an effective way of monitoring and supporting mental health. Practising mindfulness is demonstrated to decrease stress and improve student wellbeing [11]. Organisations such as Headspace [12] and Calm [13] provide guided meditations to reduce stress and anxiety and improve sleep quality. Alternatively, regular physical activity has multiple mental and physical health benefits. Studies show that physical inactivity is associated with poorer mental health, self-harm, and suicidal thoughts [14]. Thus, it is important that students are encouraged to find an enjoyable form of exercise, especially if this exercise takes place in natural environments, as additional research has demonstrated that exercise in nature or green spaces can improve mental wellbeing [15].

Building emotional support systems also plays a significant role in preventing and treating mental health struggles [16]. Discussing problems with friends and family or participating in social activities are great mechanisms of psychosocial support. Additionally, asking student mentors and alumni questions can aid in relieving academic and career stress. However, in circumstances where one's support systems are insufficient, seeking help from professionals can provide struggling students with the necessary care and treatment plans. Unfortunately, several barriers prevent students from seeking professional help. According to the WHO World Mental Health International College Student Initiative, only 24.6% of students reported that they would definitely seek treatment for future mental health issues [17], and many students would prefer to handle mental health problems on their own or discuss them with friends and family. Many reasons prevent students from seeking necessary care, including stigma surrounding mental health issues, the high cost and extensive wait times for psychologist appointments, failure to recognise problems, or the perception that treatment is not necessary [18]. Universities endeavour to support the mental wellbeing of students by encouraging discussion about mental health and providing counselling services. However, the number of students in need of treatment well exceeds the psychological and counselling services available [19].

The student mental health crisis is a multifaceted issue that involves solutions from various sectors. Improving mental health literacy and accessibility to treatment is necessary for students to prevent, recognise and manage any mental health issues. Discussing mental health aims to break down associated stigma and hopefully allow students to feel comfortable seeking treatment. For students battling mental health struggles, you are not alone. There is always someone to talk to whether that be a friend, family member or professional.

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STRIVING FOR GLOBAL HEALTH

Edition 6 · December 2022

"A decrease in the nutritional value of crops would lead to populations across the world ... suffering an increased risk of health problems."

## THE IMPACT OF CLIMATE CHANGE ON NUTRITIONAL DEFICIENCIES

BRIANNA HEINKEN

New research suggests that climate change could have a significant impact on the nutritional value of our food. Brianna writes about the potential consequences for human health and what can be done to address this growing problem, which may put billions of people at risk for a variety of health problems.

## E-CIGARETTES: THE PHANTOM MENACE

AMIN ABEDINI

Are e-cigarettes really a safer alternative to traditional cigarettes? Research suggests that the long-term health effects of vaping have not been thoroughly investigated. Don't miss Amin's important article on the potential dangers of e-cigarettes and their regulation.

## CLIMATE CRISIS: A MENTAL HEALTH EMERGENCY

LAURA KALITSIS

Climate change is causing serious threats to our mental health which are often complex and overlooked. In this article, Laura explores the mental health impacts of climate change, its impacts on social inequalities, and the increasing threat of climate anxiety.

# The Impact of Climate Change on Nutritional Deficiencies

*By Brianna Heinken*

Director of Community Engagement

New research suggests that climate change could have a significant impact on the nutritional value of our food. Brianna writes about the potential consequences for human health and what can be done to address this growing problem, which may put billions of people at risk for a variety of health problems.

The impact of climate change and global warming is well known: melting glaciers, more severe storms, increased droughts, and loss of species. However, the impacts of global warming on human health are only now beginning to be understood. Not only is climate change increasing the spread of infectious diseases, it is also affecting the food we eat. It is widely accepted that greenhouse gases warm the atmosphere and alter the water cycle, which has a direct effect on the growth of our crops. However, rising atmospheric concentrations of some greenhouse gases, specifically carbon dioxide, has also been proven to impair the nutritional value of many staple food crops.

Currently, humans obtain a majority of key nutrients from plants. Globally, 63% of dietary protein, 81% of iron, and 68% of zinc comes from plant sources [1]. These are essential nutrients for health: protein for repairing cells, iron for haemoglobin (the molecule that moves oxygen in our bloodstream) and zinc for a strong immune system. Deficiencies of these nutrients can cause an increased risk of various human diseases, ranging from blindness to abnormal brain development. Concerningly, recent studies have shown that rising levels of carbon dioxide could cause major staple crops, such as rice and wheat, to be less nutritious.

Studies have found that high atmospheric levels of carbon dioxide can result in less nutritious crop yields, with 3%-17% lower concentrations of protein, iron, and zinc compared to current atmospheric conditions1. According to research by Samual Myers at the Harvard T.H. Chan School of Public Health, the protein content of rice, wheat, barley, and potatoes decreased by 7.6%, 7.8%, 14.1%, and 6.4% respectively under elevated atmospheric carbon dioxide levels [2]. The decreased nutritional value of these crops can be explained by a shift in the plant's internal chemistry, which causes the plant to retain fewer essential micronutrients.

The decrease of micronutrients in our food could result in 122 million people becoming protein deficient and 175 million people becoming zinc deficient by 2050 [1]. The dietary iron intake of approximately 1.4 billion people could significantly decrease, increasing their risk of anaemia and other related diseases [3]. In addition, billions of people that currently live with nutritional deficiencies could see their conditions worsen. Moreover, for a majority of the world's population, most dietary protein intake comes from the consumption of plants, as meat is difficult to source and is rarely consumed. A decrease in the nutritional value of crops would lead to populations across the world, specifically those that primarily rely on plants for their nutrient intake, suffering an increased risk of health problems.

Addressing the root causes of climate change is crucial to improving this situation. A multifaceted approach is required to decrease carbon emissions globally. Specifically, it is important to recognize the carbon footprint involved in food production. Currently, the global food production system creates about 25%-30% of total greenhouse gas emissions each year [4]. To combat this, the food production industry needs to shift to a process that is more sustainable. Moving away from livestock, which requires high volumes of water and produces high volumes of carbon and methane, to a more plant-based diet could help decrease the output of greenhouse gases. Growing and selling crops locally, instead of transporting them long distances, could also help reduce the carbon footprint associated with food production. Also, replacing livestock with plants would increase the number of plants growing each year, which can act as a carbon sink to further reduce atmospheric carbon dioxide emissions.

Increasing atmospheric carbon dioxide isn't only causing global warming. It is already beginning to significantly affect food and health.

*"Currently, more than 2 billion people globally are malnourished; about 30% of the global population5. That number will continue to grow if staple crops lose nutrients due to rising carbon dioxide emissions."*

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# E-cigarettes: The Phantom Menace

*By Amin Abedini*

Publications Officer

Are e-cigarettes really a safer alternative to traditional cigarettes? Research suggests that the long-term health effects of vaping have not been thoroughly investigated. In this article, Amin discusses the potential dangers of e-cigarettes and their regulation.

E-cigarettes or electronic nicotine dispensing systems (ENDS) are "devices that deliver an aerosol by heating a solution" upon user inhalation. This is an act referred to as "vaping". E-cigarettes are also known under alternative names including "vapes", "vape pens", "e-cigs" and "personal vaporisers" [1]. These devices, as well as vaping, are most highly prevalent among young people. According to the Australian Bureau of Statistics, among those aged 18-24 years old, 21.7% have used an e-cigarette or vaping device at least once. Of those aged over 18, 8.9% currently use an e-cigarette or vaping device, and 23.8% formerly used such devices [2].

The liquid solution used in e-cigarettes contains humectants and flavourings. Humectants prevent the liquid solution from drying out, and the large variety of flavourings available for e-cigarettes attracts both new smokers, and those currently using conventional cigarettes. While the liquid solution is allegedly free of harmful materials, the process of heating and aerosolising the solution can produce a range of hazardous and cancer-inducing chemicals [3] including formaldehyde, acetone and acrolein [1]. E-cigarettes introduce fewer harmful chemicals to the user compared to conventional cigarettes [4]; however, the chemicals in these devices have been associated with several negative health effects on the different body systems, including the respiratory, cardiovascular, gastrointestinal, urogenital, and neurological systems [5]. While e-cigarettes have been suggested to have less harmful effects compared to cigarettes in the short-term, the long-term health effects of e-cigarettes have not been thoroughly investigated [3].

Additionally, the levels of nicotine, an addictive component contained in e-cigarettes, can also vary between different products [3]. More importantly, due to the limited regulations and the high variety of e-cigarette products sold on the market, the safety of these products is difficult to assess1. In Australia, despite the purchase of nicotine-containing e-cigarettes requiring a prescription, many e-liquid cartridges were found to contain traces of nicotine [6]. Due to the nicotine content, e-cigarettes can be addictive. Therefore, nicotine-replacement therapy in combination with behavioural therapy is currently in practice for those who intend to quit e-cigarettes7.

E-cigarettes have also been promoted as an alternative to conventional smoking, or for the purposes of smoking cessation. However, the evidence for the efficacy of e-cigarettes in smoking cessation has been limited to date [3,8], and many users engage in "dual use" of e-cigarettes and conventional cigarettes9. Furthermore, the use of e-cigarettes in young people has been found to be associated with future conventional cigarette smoking [1,4], which predisposes individuals to a wide range of health issues down the track [8]. As such, there is a need for further refinement of the public health initiatives regarding the regulations and access to e-cigarettes and improving health literacy on the effects of vaping to reduce the uptake of e-cigarettes in young people and prevent negative health effects down the track.

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# Climate Crisis: A Mental Health Emergency

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Climate change is causing serious threats to our mental health which are often complex and overlooked. In this article, Laura explores the mental health impacts of climate change, its impacts on social inequalities, and the increasing threat of climate anxiety.

Climate change is posing a serious threat to both the physical and mental health of humans worldwide. The repercussions of climate change such as increased intensity and frequency of dangerous weather events, rising temperatures and sea levels, as well as loss of land and biodiversity, have cascading effects on human health. The mental health impacts of climate change are multifaceted and amplify the current mental health challenges and health inequities already faced by marginalised populations. Compared to the physical health impacts of climate change, the mental health effects are less understood and often overlooked. Therefore, in order to protect mental wellbeing, we must first understand the ways in which climate change affects mental health.

## Direct impacts of climate change on mental health

The direct mental health impacts of climate change are commonly discussed in relation to dangerous weather events. Storms, floods, heat waves, and bushfires are types of extreme weather events that endanger mental wellbeing. Anxiety, depression, and post-traumatic stress disorder are mental health problems that can be caused by the destruction and trauma associated with these extreme weather events [1]. Loss of loved ones and homes that hold cherished possessions and memories due to extreme weather events can induce feelings of shock, despair, and grief for survivors [2]. Whilst communities may physically and socially recover from damages caused by major weather events, feelings of distress and anxiety may persist or resurface well after the extreme weather event has occurred [3].

## Indirect impacts of climate change on mental health

The indirect impacts of climate change on mental health are complex and dependent on underlying social inequalities. The indirect consequences of climate change on mental health result from the destruction of physical infrastructure and social networks, food and water insecurities, as well as conflict and displacement1. For example, droughts are a devastating and long-term consequence of climate change that adversely affect mental health in many ways. Droughts cause food and water shortages and insecurities [4], which in turn leads to emotional and financial stress for populations reliant on or involved in agricultural industries such as agricultural workers and outdoor labourers, as well as those living in remote and rural geographical areas [1]. Extended episodes of drought can also lead to conflict, forced migration and displacement [4,5]. People who experience forced migration due to environmental stressors associated with climate change are commonly referred to as climate migrants. As a consequence of displacement, climate migrants may endure a loss of cultural identity and sense of belonging5. Additionally, climate migrants may also experience discrimination and racism in their new host country which can exacerbate the mental health problems and emotional distress that they may already be facing [5].

## The overarching threat of climate change

Climate anxiety refers to the perception and recognition of the overarching global threat of climate change. Given that the consequences of climate change are only increasing in intensity and impacting more people over time, climate anxiety is likely to be an ongoing and growing mental health challenge [6]. Climate anxiety encompasses feelings of uncertainty about the future environment, hopelessness about the lack of climate action and distress about the disruption of connections to land and home environments [6]. Three novel psychological terms have been coined to help describe the anxiety associated with climate change. Firstly, ecoanxiety, which refers to the distress people face from constantly being surrounded by climate change and dangerous weather events [1]. Secondly, ecoparalysis, which refers to the hopelessness and frustration of inadequate action to mitigate the risks of climate change1. Finally, the term solastalgia, which describes the stress associated with detrimental environmental change that adversely impacts home environments and one's connection to their home environment [7]. Climate anxiety is becoming increasingly recognised, however, further steps need to be taken to understand the magnitude of this mental health issue and ensure that specific interventions can be designed and implemented.

## Strategies, actions and next steps

Interventions that address the effects of climate change and mental health include mitigation and adaptation actions. Climate change mitigation involves actions that reduce the source of greenhouse gas emissions and enhance greenhouse gas sinks [8]. For the effectiveness of climate change mitigation actions to be maximised, it is crucial that global leaders collaborate to prioritise such actions and allocate the necessary funding and resources8. Similarly, climate change adaptation strategies can be implemented to ensure that communities are able to cope with the consequences of climate change [8]. Examples of climate change adaptation actions include preparation for dangerous weather events, increasing education and awareness of the risks of climate change, and ensuring that there are sufficient health and psychological resources for disaster prone communities1. Additionally, psychological adaptation measures can be used to help affected individuals manage their feelings of distress and anxiety that result from climate change [1]. Primary care interventions, cognitive based interventions, individual and group therapy sessions, and crisis counselling are all potential psychological adaptations and aim to provide affected individuals with appropriate coping and anxiety management strategies [1,6].

It is evident that the consequences of climate change impact mental health. Whether mental health problems and emotional distress are caused by dangerous weather events or the overarching threat that climate change poses, the complexities of this public health issue are continuously growing and unravelling. To protect mental wellbeing, especially in those of marginalised communities and of younger generations, effective climate change mitigation actions are vital. Preservation of the environment and connections to the environment is fundamental to good mental wellbeing and can only be achieved if appropriate strategies are voiced, heard and implemented.

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# Concluding Remarks

## *That's it! You have reached the end of the 2022 Annual Edition of Regimen.*

Thank you for taking the time to read this Edition of *Regimen*. We hope you enjoyed reading about important public health topics and hearing a range of insightful perspectives. Ultimately, we hope that we have sparked a new public health interest and that you are now empowered to contribute to social and global public health change.

I'd like to thank the Publications team and contributing Strive members, it has been fantastic to hear your voices.

Here at Strive, we are always welcoming new members. If you are looking to contribute to positive social change and advocate for important health issues, please reach out to the team. We have a range of activities and initiatives such as teaching children about nutrition or leading mental health workshops for young people, assisting at our affiliated health clinics, and even writing articles for *Regimen*. For more information, or to join our team, please check out our website: https://strivehealth.org.au/

Thank you again for reading the *2022 Annual Edition of Regimen*. We hope to see you soon for the coming year's editions.

Warm regards,

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