

Our submission for the Climate Health WA Inquiry is on behalf of the Doctors for the Environment (DEA) Curtin committee. We are a not-for-profit organisation dedicated to promoting environmental advocacy among medical students at Curtin University.

Key Issues

The impacts of climate change on human health and wellbeing are profound in Western Australia (WA), as severe weather events are physically hazardous, detrimental to well being, impede access to healthcare, cause food and water shortage and also give rise to the transmission of tropical diseases³. In response to this, healthcare providers will need to address and overcome such hurdles. Outlined below are climate issues specific to WA, information on how they are deleterious for human health, recommendations on how to manage these implications, and also a digest on the potential of the medical students of WA.

Evidence

The impact of climate change on human health

Sharon Kaur, DEA WA representative, has identified current and key issues regarding the effect of climate change in Western Australia. In a previous report, she quotes, “rising sea temperatures around the world are causing glaciers to melt, as well as the thermal expansion of oceans, leaving Western Australia (WA) the most vulnerable state to rising sea levels in all of Australia¹”. The impacts of such change in sea levels poses a risk to our unique biodiversity, agriculture and infrastructure, as well as our health status with increased risk for water borne disease transmission.

The beaches of Western Australia are set to have a recession of up to 30 meters by 2040.. Since 1991, WA sea levels have risen at a rate almost three times that of the global average. A well noted example is of Fremantle, where data collected from 1987 to 2004 has displayed a concerning increase 20 cm in sea level in total. It is implied that that a rise in 1cm of sea level is indicative of 1m of beach erosion².

In addition, Australia is currently experiencing an explosion in land clearing, according to the DEA land clearing fact sheet². The southwest of WA, separated from the rest of the country by harsh deserts and dry land, is the country’s only remaining biodiversity hotspot. However, as of 2000 “~90% of the hotspot’s 310 000-km² area of primary vegetation had been cleared”. This biodiversity hotspot, known as the ‘wheatbelt region’ has seen devastating clearances of vegetation, with some parts of the region losing up to 93% of woodlands and vegetation^{3,4}.

Clearing of forests contributes to the destruction of carbon sinks, which have a role in storing carbon containing compounds and removing CO₂ from the atmosphere. This could eventually lead to an earth that is too high in CO₂ to be incompatible with life⁵.

From a health perspective, it is important to understand the implications of rising sea levels have direct impacts on the population.

It has been hypothesised that the continued climate trends will increase heat stress related mortality. This will also influence the incidence of tropical vector diseases such as dengue and urban pollution related respiratory problems⁶ (IPCC, 2001, p. 596).

Epidemiological studies have also shown a link between high daytime temperatures, a low UV index and gastroenteritis presentations in children. The El Niño Southern Oscillation cycle is mostly responsible for this variation in inter annual climate change. This 3-6 yearly cycle affects temperature, rainfall and the likelihood of storms, floods and droughts⁷.

Some regions of north west Australia have “recorded a doubling of annual rainfall over two decades” with some cyclical rainfall variation being observed⁸. However, data is limited on such topics and it is hard to predict how these changes in weather impact endemic infectious disease.

Last but not least, the aboriginal population, recent migration populations and low income households are most affected due to limited access to funds and health services.

The lack of preparation of medical students and medical trainees

The greatest public health opportunity, according to the Lancet, is to educate and address climate change in medical or health professional training. The Medical Journal of Australia article looked into the fact that medical schools placed very little emphasis on the changing climate and its impacts during training. Thus, a study found that “At workshops in 2017 at the Australian and New Zealand Association for Health Professional Educators Conference and the Global Climate and Health Summit in Bonn, no participant identified a substantial curriculum response by their medical school.”⁹ It is evident that there must be an intervention earlier on during medical school to educate students and in turn, make them advocates for the environment.

Healthcare infrastructure and the changing climate

Adaptations to the healthcare infrastructure will be integral to ensure that medical practices, hospitals and emergency services can efficiently service the community in a changing environment. According to Fitzgerald, Capon and Aitken (2019), the long term consequences of climate change, particularly those attributed to mental health, are difficult to predict, and we will be dependent on the effectiveness of our healthcare system to mitigate them¹². Furthermore, Australia’s vulnerability to climate change was demonstrated clearly in 2016, where the world’s largest epidemic thunderstorm asthma event occurred in Melbourne. This provided “important public health lessons applicable to future event forecasting, health care response coordination, protection of at-risk populations, and medical management of epidemic thunderstorm asthma.”¹⁴ Hence, it is important for WA to learn from past events and future prognosis and ensure that our healthcare system is optimally adapted to cope with drastic climate changes.

Recommendations

Recommendation 1: Education of medical students

We propose that every medical school in Western Australia, implements aspects of climate change education into their courses. WA medical schools utilise a problem based learning approach, in which a case is presented and students have to approach the cases trigger by trigger. A recommendation for implementation would be to add environmental aspects of health into the cases, allowing students to voice their thoughts and continue their interest in the topic through research. The implications of climate change on health is evidently important, and along with RACGP, we would like to advocate for specific learning objectives or units in our medical courses.

An example of such a PBL case has been mentioned in an RACGP article where a trigger is presented to students, who tackle the biological, psychological and social aspects of the case. The trigger reads “Thuy is 32 years of age and works in tourism in Cairns. Having returned to Brisbane to visit her parents 5 days ago, she presents to your practice complaining of fever, back pain, diarrhoea and retro-orbital pain. Dengue IgM is positive.... What are the risk factors for dengue fever and what public health/ preventive strategies could be implemented? Through what mechanisms might climate change affect the distribution of dengue fever in Australia?”⁹

The introduction of such materials into medical courses of WA will tackle the problem of early public health education regarding climate change. We hope to see such change implemented into universities.

Recommendation 2: Improvements to the healthcare infrastructure

Western Australia is one of the few states in Australia to have already considered adaptation strategies, outlined in the report, “Climate change: impacts and adaptation for agriculture in Western Australia”, and many of these strategies can be implemented in the healthcare sector. Other strategies include:

- Detecting and preparing for severe weather events with significant impacts on health¹³
 - With the increase in frequency and severity of weather events, it is integral to increase the detection and preparation in hospitals and medical practices
 - We should also be improving the timeliness of surveillance to be able to better prepare both patients and practitioners¹²
 - “An evaluation assessment suggested that the early heat and health warning system initiated by the SA Government was effective in terms of significantly reducing the ambulance call-outs, emergency department presentations and hospitalisations in Adelaide.”¹³
- Increased access to information regarding climate and health emergencies of WA for students, patients and practitioners
- Planning of WA-specific health emergencies and the generation of tailored therapeutic guidelines

Recommendation 3: Empowering patient education on climate change and their personal health

In order to empower patient education on climate change and their personal health, it is important to begin with addressing their insight on the problem. The Australian psychological society implements the “A.C.T.I.V.A.T.E” acronym to engages patients to seek out climate change education¹⁰

Taken from the empowering patients handbook¹⁰:

A=Acknowledge feelings

C= Create social norms

T= Talk about climate change

I= Inspire positive visions of a low-energy, sustainable, zero carbon world

V= Value the environment

A= Act personally and collectively

T= Time is now

E= Engage with nature

Our recommendation would be to use this model of thinking not only in psychology but also in medical settings. As medical practitioners we should inspire patients to discuss their views, engage in activities and creating social norms of a cleaner, carbon negative community when the opportunity arises.

It is recognised that the effects of climate change are already being felt in Western Australia and it is essential that the general public is given unbiased information regarding this. This will allow them to further understand how illness and environmental factors correlate.

We would also like for the local governments to create a climate information services for health, allowing patients to seek information regarding diseases and their impact on wellbeing. We are aware that there is a government climate change website, but would like this to be tailored to a health perspective, in which people may seek out information attributing changing temperatures to effects on health.

The role of medical students in the changing climate and a changing healthcare system

Our society is comprised of future medical practitioners and will thus comprise a significant proportion of those responsible for mitigating the effects of climate change on human health, as part of our service to humanity. Independent of the measures outlined above, we can commit to the advocacy of the environment to promote the reduction of the healthcare sector’s carbon footprint (which is 7% of Australia’s carbon footprint¹⁵). There are several propositions and guidelines already set in place to assist us with this¹⁶.

Furthermore, before the changes to our curriculum are implemented, we can take education in our own hands, and ensure all of our peers are educated in the impending dangers to society, using the AMSA short online course on climate change. We can also advocate for the course to be made compulsory to all students via our medical school.

The International Federation of Medical Students' Associations, in collaboration with the World Health Organization and the United Nations Alliance on Climate Change Education, Training and Public Awareness, has developed a training manual on climate and health, which we can enable us to understand our contribution to climate change.¹¹

References

1. Department of Health (2008). *Health impacts of climate change: Adaptation strategies for Western Australia*. Perth: Environmental Health Directorate.
2. Pattiaratchi, C. and Eliot, M. (2005). *How our regional sea level has changed*. [ebook] Perth: Indian Ocean Climate Initiative. Available at: http://www.ioci.org.au/pdf/IOClclimatenotes_9.pdf [Accessed 28 May 2019].
3. Saunders DA. Changes in the avifauna of a region, district and remnant as a result of fragmentation of native vegetation: the wheatbelt of Western Australia. A case study, *Biol Conserv*, 1989, vol. 50 (pg. 99-135)
4. Myers N, Mittermeier RA, Mittermeier CG, et al. Biodiversity hotspots for conservation priorities, *Nature*, 2000, vol. 403 (pg. 853-8)
5. How land clearing harms our health. Australia: Doctors for the Environment Australia;2019
6. IPCC. TAR Climate change 2001. Geneva (Switzerland): The intergovernmental panel on climate change, 2001.
7. Lam LT. The association between climatic factors and childhood illnesses presented to hospital emergency among young children. *Int J Environ Health Res* 2007;17:1-8.
8. Inglis TJJ, Levy A, Merritt AJ, Hodge M, Mc Donald R, Woods DE. Melioidosis risk in a tropical industrial environment. *Am J Trop Med Hyg* 2009;80:78-84.
9. Blashki G, Berry H, Harley D, Horton G & Hall G. Preparing Australian medical students for climate change, *Australian Family Physician* 2009;38: 726-729.
10. Australian Psychological Society. The climate change empowerment handbook. [Internet] 2016 [Cited 2019 Aug 28]. Available from: <https://www.psychology.org.au/getmedia/88ee1716-2604-44ce-b87a-ca0408dfaa12/Climate-change-empowerment-handbook.pdf>
<https://academic.oup.com/jpe/article/5/1/109/1294916>
11. Madden D, McLean M, Horton G. Preparing medical graduates for the health effects of climate change: an Australasian collaboration. *Medical Journal of Australia*. 2018;208(7):291-292.
12. FitzGerald G, Capon A, Aitken P. Resilient health systems: preparing for climate disasters and other emergencies. *Medical Journal of Australia*. 2019;210(7):304-305.
13. Zhang Y, Beggs P, Bambrick H, Berry H, Linnenluecke M, Trueck S et al. The MJA-Lancet Countdown on health and climate change: Australian policy inaction threatens lives. *Medical Journal of Australia*. 2018;209(11):474-474.
14. Thien F, Beggs P, Csutoros D, Darvall J, Hew M, Davies J et al. The Melbourne epidemic thunderstorm asthma event 2016: an investigation of environmental triggers, effect on health services, and patient risk factors. *The Lancet Planetary Health*. 2018;2(6):e255-e263.
15. Malik A, Lenzen M, McAlister S, McGain F. The carbon footprint of Australian health care. *The Lancet Planetary Health*. 2018;2(1):e27-e35.

16. Doctors for the Environment Australia. Improving a hospital's environmental impact: what can a doctor do? [Internet]. DEA Sustainable Hospitals; 2019 [cited 2019 August 30]. Available from: <https://www.dea.org.au/wp-content/uploads/2018/05/DEA-Sustainable-Hospitals---Practical-Assistance---05-18.pdf>
17. Heathcote A. Doctors warn Australian health system not prepared for climate change. Australian Geographic [Internet]. 2019 [cited 30 August 2019];. Available from: <https://www.australiangeographic.com.au/news/2019/04/doctors-warn-australian-health-system-not-prepared-for-climate-change/>