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The Federation works to disseminate knowledge concerning environmental health and promote co-operation between countries where environmental health issues are trans-boundary. It promotes the interchange of people working in this sector and the exchange of Member's publications of a scientific and technical nature. Amongst other things, the Federation seeks to provide means of exchanging information and experience on environmental health, to hold Congresses and meetings to discuss subjects relevant to environmental science health and administration, to represent the interests of environmental health to state agencies, national governments, and international organizations and to promote field studies of environmental health control.

INTERNATIONAL FEDERATION OF ENVIRONMENTAL HEALTH

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IFEH President's Address

Dr Susana Paixão

Once again it is my pleasure to introduce you to another issue of our Environment & Health International magazine. While we don't offer a theme for this edition the editor has chosen his editorial on 'conflict, visible and forgotten' reminding us that millions of people are in motion around the world, seeking safety, refuge, medicine, shelter and humanity.

Academic studies show refugees add value to the countries that take them in through contributing hard work, paying tax, employing others, creating wealth and enriching the culture of the host country.

I ask all readers to take a moment and ask what can you do to help someone in need?

COVID-19 is still with us, and we are all watching the development of the current variant (OMICRON) and its derivatives (BA1, BA2 and the newer sub-variations (BA4, BA5 and BA2.12.1 have all come from BA2, which appears to have won the race to become the dominant sub-variant for now). We need to be vigilant, keep ramping up the vaccine rollout, keep monitoring for either a change in COVID-19 or influenza. We also need to remember colleagues in the Southern Hemisphere are moving into winter. Data shows unusually high number of influenza cases in recent months (https://www.cdc.gov/flu/weekly/index.htm).

I take the opportunity to highlight the theme chosen for the celebration of World Environmental Health Day 2022, which, is celebrated every year on September 26 and has as its motto: "Strengthening Environmental Health Systems for the implementation of the Sustainable Development Goals" and refer you to the IFEH Facebook site and website to see all the wonderful events that took place last year.

This edition has information on WHO training and WHO-global news which you can all sign up to and provides excellent ideas, training and through WHO job site access to WHO/UN/UNIDO etc jobs, internships and opportunities.

I am sure we are all looking forward to the 16th IFEH World Congress on Environmental Health in Kuala Lumpur, Malaysia, 23 - 25 August 2022. (see https://www.wceh2022malaysia.com/). The call for abstracts has been made, so let us get writing and make this a real celebration of all the exceptional work that I know you have done since our time in Auckland and Uganda. I am looking forward to this event but with a little bit of sadness as it also marks the end of my term in office. I shall write an end of term report for the next edition of this magazine, due August 2022 as a conference special edition.

Susana Paixão
Departamento de Saúde Ambiental | Environmental Health Department
Contato : +351919786091 | supaixao@estescoimbra.pt

IFEH Honorary Secretary

By Martin Fitzpatrick, IFEH.

IFEH World Congress - update

Dear Colleagues

I am pleased to enclose the information pack for the IFEH World Congress in Kuala Lumpur Malaysia from 23-25 August 2022.

Please also note that the IFEH Council meeting and AGM will be held on the 21 - 22 August 2022, and the IFEH Faculty meeting will be on the 24 August.

The Congress website is https://www.wceh2022malaysia.com

While there is an amount of detail yet to be finalised, please be assured we are working with our Malaysian colleagues to bring this to you as quickly as possible.

with best regards,

Martin Fitzpatrick
Honorary Secretary
IFEH Share Your Research
• Abstract Submission Opened

• Abstract Submission Closes	8th July 2022, 23:59 HRS (GMT+8)
• Author Notification of Acceptance	14th July 2022
• Deadline for successful abstract submitters to pay for conference registration	23rd July 2022, 23:59 HRS (GMT+8)

For more information, please email
WCEH 2022 Abstract Secretariat:
scientific@wceh2022malaysia.com

IFEH Honorary Editor

Dr Andrew Mathieson

Chair International Environmental Health Faculty Forum (IEHFF)

This is my third magazine and the first of three planned for 2022. As the front cover suggests, I have selected stories/essays etc to highlight the ongoing refugee crisis (Ukraine, Syria, Afghanistan, etc), covid-19 and climate change. The theme for the July/August edition will be 'stories from around the world'. This will be from contributions from those of us able (in terms of finance, zoom, time away from home and being COVID-19 free) to gather in Kuala Lumpa, Malaysia to celebrate the federation, meet old and new friends and witness the transfer of the presidency from Susana to Henroy.

I attended my first IFEH World Congress in San Diego. It was my friend and fellow senior lecturer from University of the West of England, Bristol, Martin Pill who pointed out the 2 for 1 flights and the opportunity to present. I submitted an abstract and was accepted to present a paper on tier 1 and tier 2 environmental health assessments, a system developed by UK Military. I received support (and permission to present) and was supported by the legendary Major (later Lieutenant Colonel) Ken Roberts RAMC - to this day one of the most influential people in my professional life (I still ask myself 'what would Ken do' and I try to live up to his example and standards). Up until that point in my career, I had no real idea of IFEH other than it was something managers would attend. I soon found that was not the case and that if your paper was accepted you could apply for travel bursaries to help offset the cost. I also wrote to the organisers to see if they offered support for accommodation, and they were able to put me in contact with someone from the organising committee who was gracious enough to host me for the conference. She also introduced Martin and I to salsa dancing and took us to Tijuana, Mexico (at which point Martin and I realised our visas didn't allow us to leave the USA!). We had an amazing day visiting tourist and non-tourist hot spots. We stopped for lobster on the way back north before crossing the border without even a glance at our passports. I wouldn't want to try that now, but it was a different era. I also attended the faculty forum and heard about the great work of Dr Koos Engelbrecht (previous chair of the African Academy of Environmental Health) which led to further work in Africa and sparked my interest in overseas consultancy work.

As Honorary Editor, I call on academics, students and practitioners alike to keep me busy by submitting academic articles, case studies of best practice, projects and examples of excellent student work. I especially encourage practitioners to link up with academics to offer additional rigor and referencing which helps build the evidence base of environmental health practice. Please include data and royalty free photos of best practice.

I also want to hear about the unsung champions of the profession, who inspired you to do better, who motivated you and what are you doing to inspire others. Environmental health can be fickle, and we don't at this time have as visible a role as perhaps we deserve. So, if you have a story to tell please take the time to write it down and send it in. I also want to hear about the mentoring you provide and how you are helping others gain experience in areas they may not have thought about.

Plan for world environmental health day 26th September 2022 … more in Aug edition

I put several calls out for the regions to request they appoint representative to both the editorial board of the IFEH Magazine and the Faculty Forum. As you can see from the inside cover, I have several appointees and volunteers. This allows both boards to move forward. If you want to be involved in either. please write and let me know and I will see what you can do to help.

As practitioners, please take time to renew your knowledge of One Health and how you can work within this construct on a day-to-day basis to improve health. In addition, review the sustainable development goals (SDGs) and put pen to paper on how you are working to meet the challenges set by the SDGs. More and more academics and indeed governments are linking research, policy with SDGs.

Improve your networks, consider stepping out of the traditional environmental health networks and working groups to find new professionals work with them to build environmental health capacity. Consider joining the HEAL network. If you know of other networks let me know and I will publish links at the end of each magazine.

Call to action:
Dear colleagues the President of IFEH has asked me to issue a call to action. We want all EH practitioners in every Region, national organisation and every EH student at University to answer the call to action. Please post a card/ email (DGOffice@who.int) now and as often as you can to:

WHO Director-General
Dr Tedros Adhanom Ghebreyesus
WHO Headquarters in Geneva
Avenue Appia 20
1211 Geneva
Switzerland

Dear Dr Tedros,
I am an environmental health officer working in (insert your Country). I am writing to support the International Federation of Environmental Health (IFEH) and request that you celebrate World Environmental Health Day 2022 (26th September) by making a press announcement, (jointly with IFEH), that you are adding this day to the WHO calendar. Further, we ask you to voice your support for the invaluable work of IFEH and the environmental health practitioners from around the world, many of whom have worked tirelessly on the front line and with colleagues to help manage the COVID pandemic.
Yours sincerely,
(insert your name and email address)

A special welcome to colleagues from Spanish Society, IberoAmerican Society, Costa Rica, Uraguay, Peru and Brazil. I have included them in our circulation. I know that President Susana has been in discussion to encourage them to join as a Region of IFEH. We also welcome academic institutions and organisations to join as associates.

The focus for the August edition shall be the 16th IFEH World Congress on environmental health, in Kuala Lumpa. With the help of those that attend (face to face and virtually) and colleagues from the Malaysian Association of Environmental Health I hope the next edition is another bumper version.

Kind regards,
Andrew Andrew.mathieson@anu.edu.au

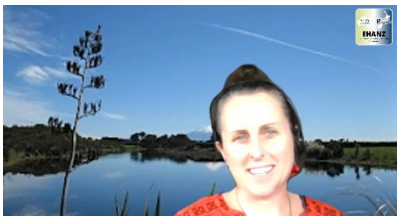
Environmental Health Australia –

"A Message from Down Under"

April 2021

Aussie Update

Last month (March) EHA was very pleased to participate in our first Cross Tasman collaboration webinar with The New Zealand Institute of Environmental Health on World Water Day. With speakers from both sides of the ditch and an engaged online audience, this was a great first effort to increase the mutual collaboration between EHA and NZIEH. A recording of the webinar will be made available to the public in the coming months, so please keep an eye on the EHA YouTube channel and website for updates.



The next EHA National Conference will be held in Launceston, Tasmania on the 26th to 30th September 2022. Yes, face to face and it would be great to see some international attendance. EHA is now seeking abstracts for oral, short or poster presentations to explore the conference theme: Environmental Health – Celebrating Triumphs and Tribulations. The deadline for submissions is May 13th. Visit the EHA National Conference web page for more information https://www.ehatas.org.au/events/event/eha-national-conference-2022

Congratulations to Vic Andrich on his appointment as the IFEH Asia Pacific Regional Group Secretary. Vic has been the President of EHA (WA) for 9 years now & an active member of EHA over a number of years holding positions as director on both the National & WA Boards. He is also Secretary of the WA EHO Professional Review Board which accredits qualifications to practice as an EHO in WA, making him the ideal candidate for the role. Congratulations Vic.

Whilst the pandemic has tended to be all consuming in recent times, it is worth noting the numerous other issues, projects and programmes that environmental health contributes to around the country, and issues that are evolving globally. As an example, the El Nina conditions here in Australia for the

second year in a row highlighted a continuing warming trend over the Pacific Ocean with sultry conditions and then catastrophic flooding. It is worth noting the typical environmental health issues associated with these conditions, such as mosquito control costs and efforts and various disaster management scenarios which EHOs here have been dealing with.

I encourage you all to keep engaging with the science and the debate, whether in your workplace, assisting your Institute, volunteering or pursuing further skills and knowledge. I would also like to acknowledge the volunteer contribution of so many Environmental Health Professionals making a contribution here in Australia and globally. Our profession is always the better for the efforts you put in and I encourage, all, but particularly our younger professionals, to get involved if you aren't already.

Philip Swain LFEHA

National President
Environmental Health Australia

New Zealand Institute of Environmental Health

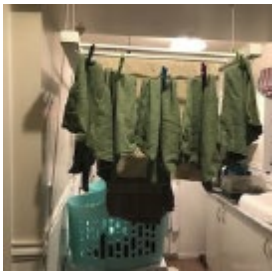
Kia Ora from New Zealand!

Here is a brief update on some of the NZIEH news from the last six months.

NZIEH celebrated World Environmental Health Day with a few events. National President Tanya Morrison was delighted to be invited as a guest speaker for Environmental Health Australia (EHA) World Environmental Health Day WEHD 2021 Live Chat with her 'Two parts Hydrogen, one part Oxygen' presentation and also as a guest for the Malaysian Association of Environmental Health (MAEH). Tanya, alongside a panel of International speakers talked about New Zealand's pandemic response recovery.

NZIEH National Executive ran a 'Branch vs Branch' upcycling competition for members. Waikato/ Bay of Plenty branch were the winners with an entry submitted by member Lisa Millican, an EHO from Whakatane District Council. Lisa's winning upcycling entry of a 'Drying rack' is pictured below. All entries were blind judged by Karen Perry from Safe Food Services, an NZIEH Bronze partner. The prize was a $250 donation to a registered NZ charity of their choice and Waikato/Bay of Plenty Branch chose St John (New Zealand Ambulance service) as the recipient.

Side of wooden baby pen, bit chewed (so done some time as puppy pen in the past) found dumped on road side. Scrub, scrub, scrub. Clean. Sand. Paint. Some cord, curtain wheels, and bits. Now a well used laundry drying rack that can be raised and lowered if feeling short.



NZIEH also ran two further competitions, expanding our reach for the first time to offer a colouring competition to Early Childhood Education centres and an Upcycling competition to School aged children which were both well received.

Our Tasman/Canterbury Branch Representative Deirdre O'Grady helped to organise a beach clean up of the Motueka Sandspit (located at the top of the South Island) with her EHO colleagues from Tasman District Council to celebrate World Environmental Health Day 2021.

The Sandspit is located in the Tasman region and is an internationally recognised site for local and migrant shorebirds. One of the birds that come to the Motueka Sandspit is the Godwit. They migrate from Alaska to New Zealand’s coastline, which includes the sandspit, where they feed here over the summer before heading north again in March for their breeding season. Godwits have the longest migratory flight of any bird on record, flying 11,000km across the Pacific.

Godwits usually arrive in the Motueka Estuaries in late September, hence, the Environmental Health team, along with the guidance of Harbour Master’s Daniel Cairney and Paul Appleby, decided a clean-up of the sandspit to welcome the arrival of the Godwits was a good way to celebrate World Environmental Health Day 2021.

A very successful day was had with approximately 18 x 60L refuse sacks of rubbish collected. Tasman District Council's Environmental Health team is made up of Adrian Humphries (Regulatory Services Manager), Daniel Winter (Team Leader), Tracy Waddington, William Liebisch and Deirdre O'Grady (Environmental Health Officers), Larissa Illing and Melanie Welsh (Administrator Officers). The team had a great day and finished with a BBQ.

We are excited to announce a new trans-Tasman partnership we have formed with Environmental Health Australia, called EHANZ. We launched this collaboration on 22 February 2022 with an introductory video via our Facebook page and website – follow this link to view the short video: here

This partnership aims to bring members "on both sides of the ditch" informative webinars throughout the year, centred around international events. NZIEH is proudly hosting the inaugural EHANZ event with a webinar based around World Water Day on 22 March 2022.

Finally, we are looking forward to our annual professional development conference to be held virtually online on 13-14 April 2022. For further details please visit our website https://nzieh.org.nz/our-conference.

Nga mihi
Tanya Morrison National President

"Risks and Solutions to Global Security: From the Pandemic to Future Health Threats"

Peter Archer FCIEH, Past President of IFEH

In my role as Past President of the International Federation of Environmental Health (IFEH) and my involvement in the World Federation of Public Health Associations (WFPHA), I have been invited to attend regular meetings of the 'InterAction Council' currently working on lessons learned from the Covid-19 Pandemic. Past CIEH President, Dr. Stephen Battersby, has also been invited to join the meetings, but unfortunately Stephen has been unable attend due to ill health. The meetings of the InterAction Council are coordinated by Dr Joanna Nurse, in her role as its Strategic Advisor and Former Head of Health and Education, at the Commonwealth.

The InterAction Council (IAC) was established in 1983 as an independent international organisation to mobilise the experience, energy and international contacts of a group of statesmen who have held the highest office in their own countries. Council members jointly develop recommendations and practical solutions for the political, economic and social problems confronting humanity.

In relation to the current Covid-19 pandemic, members of the InterAction Council have met three times to discuss the latest developments and to make recommendations. The emergence of the Omicron COVID-19 variant underscores the risks of the current response to the pandemic, with each wave devastating economies and international trade, while deepening divisions around the world.

Following the March 2022 meeting of the InterAction Council, Co-Chair Bertie Ahern said *"Omicron shows that vaccine inequality must end. We know that vaccines are a critical part of the solution, and yet deepening global inequalities are being created by a lack of vaccines in low-income countries. We must not ignore the root causes of vaccine nationalism and the inherent risks presented by new variants that may evade the protection afforded by existing vaccines. We are all in this together."*

But vaccines are only part of the story. To combat the pandemic effectively, we must understand the effectiveness of a range of public health measures and the need to combine interventions. Furthermore, ensuring a balance of public health measures that reflect individual and national rights with responsibilities should be considered in order to avoid punitive and extreme measures to control the pandemic.

Denial, panic, reactive decisions, combined with inward looking, protectionist and nationalist policies are common human reactions to dealing with emergencies. In contrast, countries that have fared well throughout the pandemic were well prepared and reacted rapidly with modern public health systems that were enabled by political leadership to galvanise multi-sector action.

The absence of a comprehensive global strategy or plan to navigate our way out of the pandemic is a key challenge that reflects the wider failings of our existing multilateral mechanisms to garner decisive and collaborative action. The InterAction Council wishes to acknowledge the progress made by the WHO, with the recent agreement to advance a pandemic treaty or convention next year – however, this important initiative focuses only on future solutions. We are now more than two years into the pandemic, with substantial risks posed by new variants and continued pandemic waves; and there is a strong need for a global strategy with multilateral action to bring the pandemic to an end. This Strategy is needed NOW.

The threats to global security and the risks of continuing with a fragmented and nationalist response to the pandemic are substantial. The Council supports a global response enabled by multilateral

leadership. Furthermore, the InterAction Council recognises the importance of investing in and strengthening our public health systems to protect everyone around the world.

Building upon discussions from the IAC meetings on the COVID-19 Pandemic with its members in December 2021, March & April 2022, the following recommendations are going forward to various bodies from May 2022 onwards, the first likely to be the World Health Assembly later in May 2022.

The InterAction Council (IAC)

- ✓ Calls on governments everywhere in the world to urgently ensure that vaccine inequality ends.
- ✓ Supports the development of an international pandemic treaty to help prevent and mitigate future pandemics.
- ✓ Calls for multilateral leadership to coordinate a global strategic response that targets risks, maximizes effective public health measures and multi-sector support to ensure an equitable end to this pandemic.
- ✓ Urges investment and modernization of public health systems to prevent, prepare for, avert risk, build resilience, respond, and recover from current and future health threats.
- ✓ Calls for strengthening of our multilateral global security architecture to prevent pandemics and address health threats.

At this stage the IAC is asking bodies associated with the Council to endorse this statement and to participate in a taskforce to take the work forward. I hope that the IFEH will be able to add its support as we represent a large body of EHPs working in the public health field in at least 20 countries and with long experience of infectious disease control which can be traced back for at least 100 years.

In this edition of the IFEH Magazine I believe there is an article by Graeme Mitchell, an EH academic from Liverpool John Moore's University and Secretary to the EFEH (European Federation of Environmental Health) outlining the EH experience of the Pandemic in different countries.

I would like to mention a book sponsored by CIEH and published earlier this year entitled 'COVID-19: The Global Environmental Health Experience' by Chris Day, Rob Couch, Surindar Dhesi. You can view the details about the book and a review at - https://www.barnesandnoble.com/w/covid-19-chris-day/1139562778

This book is devoted to the efforts of Environmental Health Practitioners (EHPs), their employers and supportive professional bodies world-wide in responding to the COVID-19 pandemic. The Foreword is written by the IFEH President, Susana Paixao. The book is part of the 'Routledge Focus on Environmental Health' which is coordinated by Dr. Stephen Battersby.

We are now in the process of collating the experiences of IFEH Members in assisting in the control of the Pandemic and lessons learned. If you have stories to tell about your experiences please send them to me – peterarcherrhs@btinternet.com

Drug use: the Portuguese paradigma for a better public health

Cabral, N.; Moreira, F.; Almeida, J.; Paixao, S.
Polytechnic Institute of Coimbra - Coimbra Health School

In Portugal, the beginning of the drug consumption phenomenon coincided with a period when national measures were practically non-existent. However, the few creations of government initiatives in the 1960s were part of an insufficient legal and moral model, further hampered by the lack of preparation of the police and supervisory apparatus and by the manifest imperfection of the current legal instruments.

Under the motto “treat rather than punish” (Trigueiros et al., 2010, p. 5), CDTs avoid imposing fines on individuals, opting more often for admonition and offering the possibility of suspending the sanction, if the individual agrees to go to treatment.

Thus, the Decriminalization in Portugal that took place in 2001 brought positive aspects such as:

- It resulted in a decrease in the number of consumers.
- An increase in drug addicts undergoing treatment
- Increase in drug seizures.

In fact, an internal evaluation of the national plans against drugs and drug addiction, carried out in 2009, showed that the drug situation in Portugal improved in the period 2004-2007 (Moreira et al., 2011). It was concluded that until 2009, there was an increase in the demand for treatment and a decrease in consumption, especially in the younger population, which is attributed to the concentration of efforts in the search for reduction actions instead of actions in the courts (Moreira et al., 2011)

Drug-related deaths

Figura 1 - Drug deaths per 100,000 population

Taken from: https://transformdrugs.org/blog/drug decriminalisation in portugal setting the record straight?fbclid=IwAR1iFY4 6Fz5Snz x8Y2FoK0qqDxGFZ85D6_G_e8lRGML3Izqu_qGNkVyk4

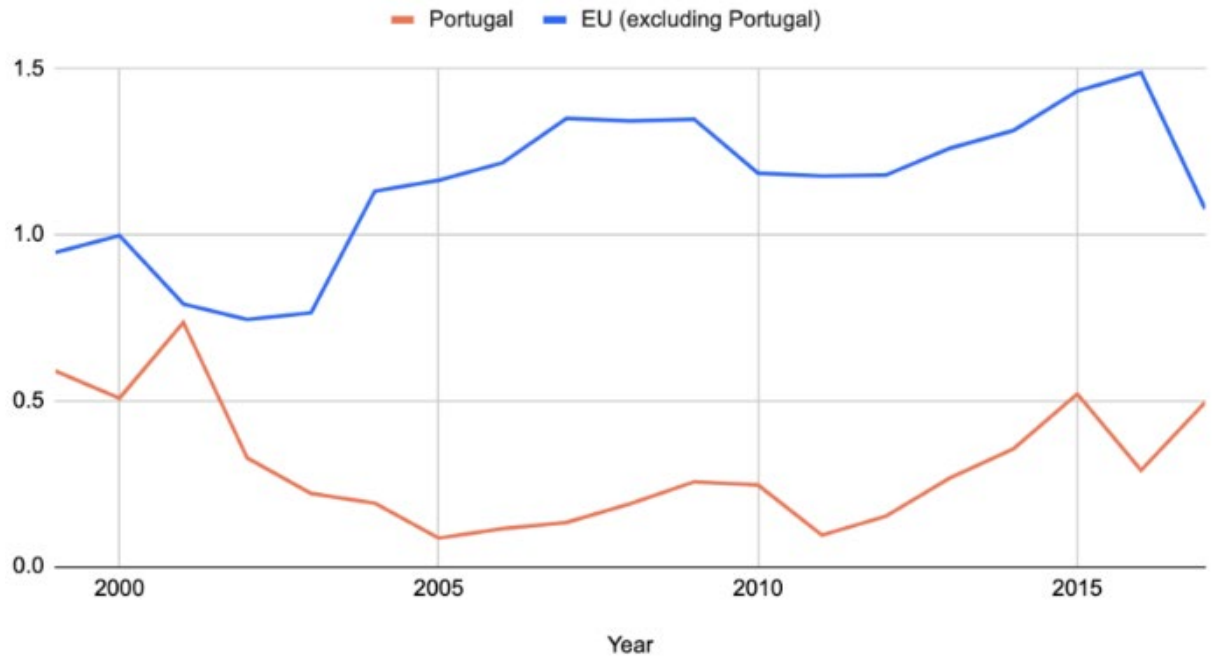


Figura 1 - Drug deaths per 100,000 population

Taken from: https://transformdrugs.org/blog/drug decriminalisation in portugal setting the record straight?fbclid=IwAR1iFY4 6Fz5Snz x8Y2FoK0qqDxGFZ85D6_G_e8lRGML3Izqu_qGNkVyk4

In 2001, Portuguese drug death rates were very similar to the EU average. While rates fell in Portugal following reform, they increased across the rest of Europe in the same timeframe. From 2011 onwards both Portugal and the rest of the EU have trended similarly, rising until 2015/6 — however, the gap between the two remains considerably wider than it was pre-reform. In real terms, drug death rates in Portugal remain some of the lowest in the EU: 6 deaths per million among people aged 15-64, compared to the EU average of 23.7 per million (2019). They are practically incomparable to the 315 deaths per million aged 15-64 experienced in Scotland, which is over 50 times higher than the Portuguese rates.

Drug use

Levels of drug use in Portugal have been consistently below the European average over the past twenty years. This is particularly the case among younger people: Portugal has some of the lowest usage rates in Europe among those between the ages of 15-34.

Drug policy reform in Portugal was combined with a change in approach to drug education, moving away from abstinence-based 'just say no' campaigns. Drug use in schoolchildren has been consistently below the European average for the past twenty years. Rates in 2019 were roughly the same as 2001. In line with European trends, as reported by the European school survey on alcohol and drugs (ESPAD), they have shown a gradual, consistent decline in the last 10 years. ESPAD also reports that perceived availability of drugs among children in Portugal is lower than the European average.

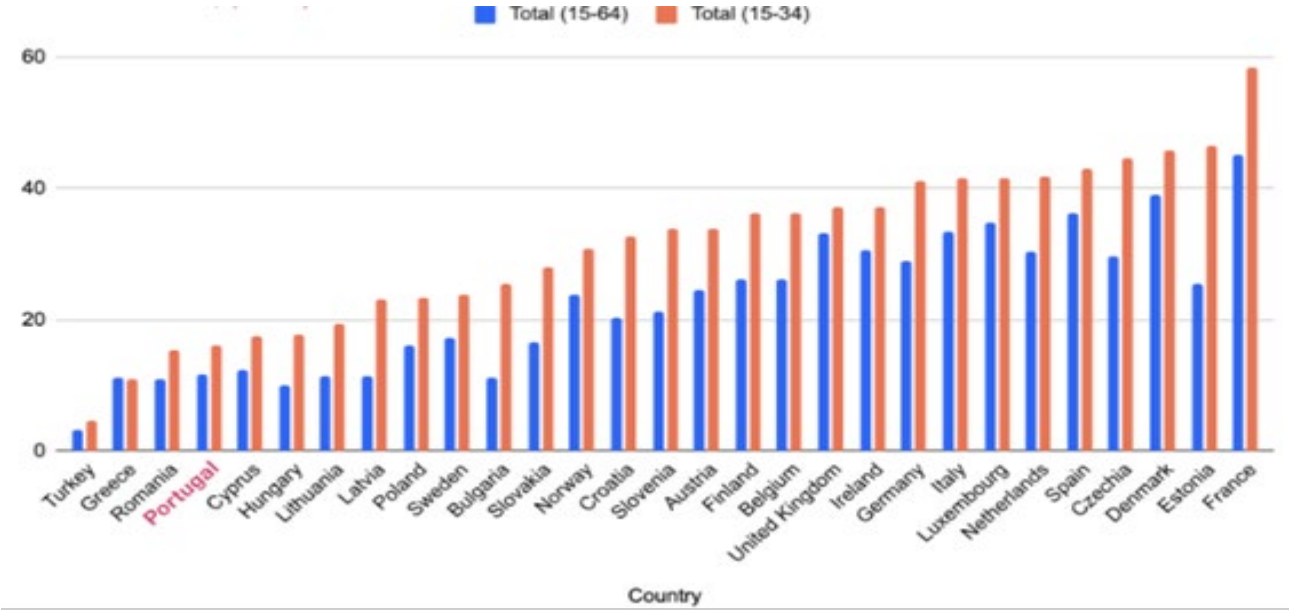


Figura 2 - Percentage of people using illegal drugs (2020)

Taken from: https://transformdrugs.org/blog/drug-decriminalisation-in-portugal-setting-the-record-straight?fbclid=IwAR1JFY4-6FzSSnz-x8Y2FoK0qqDxGFZ8SD6_G_e8IRGML3izqu_qGNkVyk4

As can be seen in the figure above, Portugal is the 4th country with the fewest people using illegal drugs in 2020, with about 18% of the population. On the other hand, about 60% of the population of france used illegal drugs in 2020, making it the country that consumed the most drugs that year.

Consumption rooms

Figura 3 - Consumption room

Taken from: https://www.talkingdrugs.org/portugal-set-to-introduce-its-first-drug-consumption-room?fbclid=IwAR35NCwMnwyqoUgtI2tAsvkIjZRITkCuhHvGUbauNTm7S5TwTNbJ1mXcmI4

Consumption rooms, are “professionally supervised healthcare facilities where drug users can use drugs in safer and more hygienic conditions”. Their primary goal is to mitigate the risks that stem from intravenous drug use, particularly among marginalized communities. By providing a safe, secure environment, DCRs can help combat injection-related complications, blood-borne infections such as HIV and Hepatitis C, and overdoses. They also seek to contribute to a reduction in drug use in public places and the presence of discarded needles and other related public order problems linked with open drug scenes. Typically, drug consumption rooms provide drug users with: sterile injecting equipment; counselling services before, during and after drug consumption; emergency care in the event of overdose; and primary medical care and referral to appropriate social healthcare and addiction treatment services.

The effectiveness of drug consumption facilities to reach and stay in contact with highly marginalised target populations has been widely documented (Hedrich et al., 2010; Potier et al., 2014). This contact has resulted in immediate improvements in hygiene and safer use for clients (e.g. Small et al., 2008, 2009; Lloyd-Smith et al., 2009), as well as wider health and public order benefits.
With consumption rooms, there is increased chances that users will accept a referral to treatment and awareness of treatment options and also promote clients’ service access.

Conclusion

Drug problem is a worldwide scourge no one can doubt. As the number of consumers increased over the years, also problems and attempts to solve them increased. Two ways of dealing with the drug and its associated problems were quickly established: treating it as a public health problem, or referring it to the criminal justice system.
As Portugal treated drugs has a health problem and decriminalised drugs, the consumption decreased, as did mortality and registration of related diseases.The number of drug addicts in treatment has increased and the courts have recorded far fewer drug-related cases, making Portugal a special, because decriminalization was not, as in other countries, associated with an increase in prevalence of cannabis use among young people.
On the other hand, the existence of rooms for assisted consumption improved the quality of life of addicts as well as the public health problems associated with drug consumption on the streets, and in particular the disposal of waste associated with consumption.
This paradigm shift in Portugal has become a case study that the world should follow.

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ADVERT – Taylor and Francis

WHY IS IT WORTH IT? ADAPTATION AND RESILIENCE OF ENVIRONMENTAL HEALTH PRACTITIONERS IN IMPLEMENTING KEY INTERVENTION STRATEGIES DURING COVID 19 PANDEMIC. CAPE TOWN PERSPECTIVE.

Background about the Author:

Dr Andile Zimba holds a Doctor of Philosophy degree (PHD) in Social Science-Development studies) from the University of Fort Hare in South Africa. He is currently working for the City of Cape Town as an Area Manager: Health Services. He has a collective experience of more than 30 years in the Public Health sector.

Abstract

The COVID-19 pandemic has had a disastrous impact the world over. Countries have struggled to respond effectively to the challenges posed by this virus. In responding to the COVID 19 pandemic, Environmental Health Practitioners (EHPs) in Cape Town had to venture into unchartered territories with limited information and expertise to deal with the pandemic. Therefore, they had to adapt and be resilient in the face of adversity in order to cope and overcome the new challenges brought by COVID-19.

However, this presented an opportunity for EHPs to learn to deal with the challenges posed by the emerging diseases. The broad scope of practice of Environmental Health Practitioners inter alia surveillance and prevention of communicable diseases, health surveillance of premises, monitoring of port health, and management and control of the disposal of the dead meant that they were in the center of the battle to combat the scourge of the disease.

In essence, this profession is generally undervalued and overlooked, which informed the decision to write this article and dispel these perceptions. The aim of this article is to demonstrate the adaptability, resilience, innovation, versatility, and flexibility of this profession in dealing with pandemics; and to demonstrate its value as well as debunk the discourse that this profession is not valuable.

Keywords: adaptation, resilience, innovation, COVID 19

Introduction

Pursuant to the outbreak of the COVID 19 pandemic in South Africa, the government speedily reacted to contain the spread of the disease and flattened the curve. The early intervention of the South African government has been hailed by the World Health Organization as one of the best interventions in the world. To prevent an increase in the number of COVID 19 related deaths, the South African National Department of Health issued directives to guide Environmental health. The city of Cape Town was obliged to adhere to these directives and guidelines. This article attempts to show how successful the intervention of EHPs was in flattening the transmission curve. Whiley et al, 2018 also argue that there is a general perception that this profession is under recognized, overlooked and misunderstood. In the following discussion, the adaptive and resilient nature of the EHPs,' interventions, and challenges they faced in helping combat the pandemic will be discussed.

Adaptability and resilience: The Environmental Health Department's response to COVID-19

The outbreak of COVID 19 compelled EHPs to adapt to new methods of combating the diseases. These new methods posed a challenge to the profession because of the uncertainties and confusion surrounding the pandemic. EHPs had to show a degree of adaptability and resilience in the face of adversity. Bronen and Chapin (2013) define adaptive governance as invoking and exploring different,

drastic measures to minimize societal risks in a disaster situation. Furthermore, Jansen and van der Voort (2020) refer to it as the ability to deal with complex societal issues and the uncertainty about the actions to be taken. They emphasize that adaptation is essential when facing a major, disruptive change, such as the COVID 19 pandemic.

The above assertion is supported by O'Leary (1998), who refers to resilience as "one's ability to function and go beyond original level of functioning notwithstanding the person's continuous exposure to hazardous and stressful conditions". In addition, Ledesma (2014) asserts that resilience is the ability to bounce back from an adversity, frustration, and misfortune and is essential for the effective leader to thrive under the circumstances. Invariably, during COVID-19 pandemic, fatigue settled in amongst the Environmental Health Practitioners, however, they thrived beyond their ability in helping to flatten the curve of transmission. Environmental health practitioners had to act swiftly to demonstrate the linkage between adaptive governance and resilience as a means to meet the unexpected demands of COVID-19. This was demonstrated by EHPs' ability to identify cases and contacts and ensure that those identified were able access health facilities for treatment. Moreover, EHPs established and manned call centers to coordinate cases thus ensuring that those affected got the necessary care and treatment. It is on this basis that Lancaster, et al (2020) concede that "reflexive, responsive and adaptive" intervention is germane in fighting the pandemic. In the following discussion, the two concepts viz: adaption and resilience are discussed in relation to environmental health.

Environmental health key intervention strategies: COVID 19 pandemic

Several key environmental health intervention strategies that can be applied to any settings of high-risk transmission in relation to the COVID-19 pandemic are discussed:

Surveillance and prevention of outbreak response

Environmental health is recognized as an essential discipline in preventing disease and protecting the health of communities and is an integral part of environmental public health and public health practice (NACCHO,2014). According to Sein (2020), "COVID19 has essentially forced us deep into the digital world". As a result, Environmental Health Practitioners adopted a digitalized new way of case and contact tracing during this pandemic, as the Western Cape Health department identified it as the best method of preventing widespread community transmission (Western Cape Health Department, 2020).

A resurgence surveillance dashboard report summarizing the resurgence in a sub district which feeds to the National Department of health was established (Western Cape Health Department, 2020). Furthermore, each week, case-based surveillance data is discussed on any hotspots identified and appropriate responses to contain clusters is mounted (Western Cape Local Government, 2020). Tracking of environmental health exposures and related health outcomes differs during infectious disease outbreaks (Klyle, et al., (2006), it is on this basis that the Environmental Health Department established call centers across the city in tracking and tracing cases and contacts.

Data collected by Environmental Health Practitioners in these call centers regarding the exposure of cases and contacts were used as a model for decision making in terms of the quarantining, isolation and ultimate discharging of COVID-19 clients (Kyle et al, 2006. This was reinforced by the PEHC (2000a) when it said that the existing environmental hazard, exposures, and disease tracking systems were often not linked together.

Adapting to this new tracking program by EHPs has improved health outcomes in combatting COVID-19 (PEHC, 2000a). In the event of a death occurring at a hospital/care or home due to COVID 19, Environmental Health Practitioners were notified through a special email address created to deal with all COVID-19 related cases. A compliance hotline was established to encourage the public to report any noncompliance to social gatherings or to other COVID-19 behavioral control measures (City of Cape Town, 2020).

Health surveillance of premises

Aldrich and Pfeffer (1976) indicate that organizations strategically adapt to their environment when confronted by difficult choices. This manifested in environmental health as COVID 19 posed a major problem at the premises as infections were reported on a daily basis. Environmental Health Practitioners had to adapt to new intervention strategies by ensuring that the wearing of Personal Protective Equipment such masks on the business premises was done to minimize infection. In other words, to quote an assertion made by Ramalingam et al (2020), adaptive leadership is continuous learning and adjusting responses as and when it is necessary to fight the pandemic.

Conversely, resilience as espoused by Ledesma (2014), is the ability to bounce back from an adversity, frustration, and misfortune and is essential for the effective leader to thrive under the circumstances. In applying these approaches, EHPs had to ensure that there is a reduction in the number of patrons entering their premises as part of the infection and prevention protocols and patrons had to adapt to the new measures. The precise aim of invoking these infection and control guidelines was to increase knowledge, attitudes, and practices to halt the spread of the disease (Department of Health, 2020).

The COVID-19 pandemic gave EHPs a rare opportunity to deeply examine (Sein, 2020) the decontamination and sanitization of premises after an outbreak. A data base of reputable companies to decontaminate and sanitize premises was developed as a best practice of information management (Sein, 2020). The COVID-19 email address was created for business owners to contact EHPs when a COVID-19 case is identified and arrangements to decontaminate premises need to be carried out by a reputable decontamination service provider as a matter of urgency.

A central Provincial Data office was established in collaboration with other departments to ensure a robust process of data collection. This prompted a speedy response in infection containment. Old age homes and early development premises accommodating vulnerable groups such as the elderly and children were the focus areas. Significantly, EHPs gave guidance on hygiene measures, screening and testing, isolation and quarantining, as well as general outbreak response.

Approach towards a behavioural change

The unprecedented outbreak of COVID-19 could not be treated as business as usual by Environmental Health Practitioners, as it necessitated them to act swiftly to contain the spread of the virus based on the adaptive evidence-making and decision making as advanced by Lacanster et al (2020). Given the fact that COVID-19 is a highly contagious virus transmitted through speaking, coughing and/or sneezing by droplets that are inhaled or absorbed through the nose, and/or eyes of another person, behavioral change had to occur (Western Government Health Department, 2020).

COVID-19 as a social phenomenon required a multifold approach, which was not only confined to treatment but to behavioral change in people to curb the spread of the virus. Ideally, prevention of the spread of the virus is achieved through adhering to infection control measures. Martens et al, (2010) argue that health improvement can be broadly related to knowledge transfer, which is centred on behavioral change patterns. Behavioral change was one of the key approaches which was promoted by the EHPs to prevent ongoing viral transmission. Invariably, these activities formed the basis of targeted community-based interventions that brought together an integrated interdepartmental transversal approach focusing on hotspots, super spreaders and vulnerable areas.

EHPs were compelled to monitor areas with high numbers of visitors to ensure compliance and where there was non-compliance, compliance notices were issued (City of Cape Town, 2020). According to Hartnell (2005), behavioral interventions based on factual knowledge and life skills to promote behavioral risk reduction are crucial in disease control, prevention, and this result in communities taking ownership of their own health. A Social distancing approach has been adopted worldwide as one of the measures to reduce the rate of transmission of COVID-19. With its rapid method of transmission, coming together with other persons warranted adherence to social distancing. The

behavioral changes entailed wearing of masks in public, social and physical distancing and regular hand washing and /or sanitizing as precautionary measures were enforced
with the collaboration of law enforcement agencies. Environmental Health Practitioners, as agents, are crucial to the success of eliminating COVID-19 transmission and developing a critical consciousness of raising awareness and enabling communities to adapt and recognize their capacity to transform their social realities (Francis and DePalma, 2015).

The training background of Environmental Health Practitioners served them well in imparting knowledge to communities regarding the method of transmission of COVID-19 and this showed the flexibility of the profession in adapting to a new reality. Shulman (1987) asserts that blending content and pedagogical knowledge and experiences is imperative in understanding and dealing with the pandemic. Adaptive management in ensuring diverse interests and abilities (Shulman, 1987) of the communities and individuals in understanding disease transmission was crucial in making inroads in slowing the scourge of COVID-19 as EHPs are well equipped with these necessary skills. Identifying hotspot and cluster areas was effective in mitigating the COVID-19 pandemic as health promotion focused on these areas and the success of this is attributed to a collaborative approach with other stakeholders to cope with an outbreak of this magnitude (Western
Cape Local Government, 2020).

Handling and disposal of human remains

In response to the high COVID-19 mortality rate, Environmental health practitioners had to devise sophisticated and innovative methods of handling the dead and the interment of human remains as the virus is highly contagious and may survive for hours on solid surfaces (Heymann, 2008). This compelled health authorities to introduce stringent measures in dealing with human remains and to break the transmission cycle (Department of health, 2013). In the COVID-19 world, innovation as postulated by Marie et al, (2016) requires a close network of mutual or interdependent supportive relationships. A collaborative approach was forged between EHPs, funeral undertakers, forensic units, Emergency Medical Services and community to ensure that the human remains are handled with circumspection and disposed of safely. Stringent requirements were put in place for all premises handling COVID-19 mortal remains. Premises were compelled to have valid certificates of competence (Department of health, 2020). These guidelines provided guidance and advice to funeral undertakers on management of infectious human remains, inspection procedures of premises where bodies are prepared, stored and disposed of, and ensuring that the burial or cremation of COVID-19 mortal remains take place in suitably approved cemeteries and crematoria. The World Health Organization (2002), emphasizes that prompt identification and disposal of the dead must take place to prevent the public being exposed to the toxic by-products of bodily decay and to reduce transmission of the disease.

EHPs are required to safeguard and protect the wellbeing of workers handling the deceased by ensuring that there is sufficient personal protective equipment. The guidelines stipulated the conditions and requirements for washing of deceased and storage of the bodies. EHPs have to ensure that the viewing of dead bodies takes place at prescribed places which meet health requirements; such as funeral Parlors. EHPs have to inspect all vehicles transporting those who died of COVID-19 and ensure that the vehicles comply with health requirements, and that coffins are disinfected to avoid cross infection. Bodies have to be hermetically sealed and disinfected as part of the precautionary measures.

Impact of Air Pollution on covid-19

By world's standards, air pollution is considered a major environmental health risk to public health and the greatest challenge of our millennium (Comunian et al; 2020). The outbreak of COVID-19 presents an opportune occasion for EHPs to emphasize the importance of the quality of air that we breath and how to better manage it. Comunian et al, (2020) observe a correlation between the spread of the virus and air pollution. They postulate that particulate matter (PM) could act as a carrier through the aerosol, conveying the virus and increasing its spread and inducing damage to the lungs Furthermore, the interconnection and correlation between a good climate and conducive living

environment result in good health outcomes.

Olutola and Wichmann (2020) assert that one of the causes of the increase in respiratory symptoms is poor air quality. In mitigating the adverse environmental effects of air pollution during COVID-19 pandemic, most of the major polluters and industries were closed by the National Government during the lock down period. The COVID-19 lockdown period, provided an opportunity for the City of Cape Town Air Quality Management unit to implement innovative methods such as online emissions management systems and auditing of facilities to ensure prescribed emission limits are adhered to. EHPs constantly monitored these industries as they are great air polluters.

In essence, the direct correlation between air pollution and COVID-19 transmission is that it offers a unique opportunity to learn about agility and adaptability in response to a pandemic ((Jansen and van der Voort, 2020). All people inhale air and this makes it imperative for the Environmental Health to ensure that the level of air pollution is minimized to decrease disease transmission. To respond to this gap, Environmental Health Practitioners had to adapt to diverse interests and abilities of air pollution management and control methods such as enforcing wearing of masks in public (Francis and DePalma, 2015) Like all pandemics, the emergence of COVID-19 has been entirely driven by human activities. This further laid groundwork for Environmental Health Practitioners to explore feasible adaptation options to protect lives and to mitigate the situation (Bronen and Chapin, 2013).

Humanitarian aid during the COVID-19 outbreak

As part of the transmission reduction strategy, refugees and homeless people had to be sheltered in safe spaces to avoid the disaster. As a result, large numbers of homeless people and refugees had to be moved to safe sites such as Strandfontein, Paint City and Wing field to curtail disease transmission. This pandemic has placed an unprecedented burden of addressing environmental health concerns on these sites which were far from meeting the required health standards. Poor ventilation is associated with overcrowding. As the College of Medicine (2020) puts it: close proximity of individuals to each other in closed settings serves as potential places for viral droplet infection.

As aptly put by World Health Organization (2002), “significant numbers of people are exposed to extreme events to which they are vulnerable during disasters and this often results in a marked reduction in their ability to sustain their normal living conditions, with resulting damage or risks to health, life and livelihoods”. Refugees and homeless people were rendered vulnerable by accommodating them in these overcrowded sites. This approach proved to be self-defeating as infection and prevention control measures were non-existence in these sites. This critique might sound harsh but the reality of the matter is that overcrowding and poor ventilation perpetuate the spread of COVID-19 through viral droplet infection. WHO(2002) emphasizes that “vulnerability is a function of susceptibility and resilience which helps to identify those members of a population who are most likely to suffer directly and indirectly and find it more difficult to re-established to their accustomed patterns of living”.

Bronen and Chapini (2013) asserts that an adaptive governance framework to allow communities a continuum of responses from protection is critical, but in this instance EHPs find themselves demanding from the authorities the provision of minimum basic health services such toilets, water supply and hand washing soap at these sites. Uitto (2008) suggests that because of the lack of capacities from the vulnerable groups, social protection has to come from the government to shield them from the COVID-19 pandemic as an innovative use of existing neighborhood groups which have to be sheltered in safer spaces. More often than not, EHPs have to be called in to deal with the immediate problems in these sites. They find themselves managing humanitarian crises with little experience in dealing with displaced people. Multi-disciplinary teams made up of different departments were formed to address the environmental health problems. The World Health Organization (2002) indicates that in reducing community vulnerability, environmental health had to first, reduce the risks of fecal-oral transmission of diseases related to poor hygiene which are common in such settings. Second, through health promotion awareness they had to make people more adaptive when they had to face the additional stress of the disaster. Third, water and sanitation

problems were referred to the relevant departments and they provided water tanks and portable toilets. Bronen and Chapini (2013) strongly state that disasters disrupt the livelihood of vulnerable groups and create unintended consequences associated with an unsafe environment.

Challenges faced by Environmental Health
Environmental Health Practitioners were confronted with numerous challenges during COVID-19 pandemic, which are as follows:

Informal settlements: City of Cape Town
Gibson (2020), posits that the rise in urbanization and migration to the City has led to the establishment of many informal settlements in and around Cape Town. This has resulted in unplanned informal houses, which are close to each other and not accessible. Due to the high density of informal settlements, implementing social distancing becomes enormously difficult for EHPs. Gibson (2020) further elucidates that social distancing aims to reduce interactions and invariably reduce infection in communities. Community containment was introduced with little success.

Basic health services
The outbreak of COVID-19 revealed the long standing and glaring gaps of lack of provision of basic services such as water and sanitation, as well as the existing overcrowding in the informal settlements (Maphanga and Mkhize, 2020). The availability of these basic minimum health services is central to the reduction of COVID-19 transmission. Such health disparities hamper the endeavors of environmental health providers to conduct environmental health surveillance through assessing, detecting, managing, controlling, monitoring and evaluating to serve as early warning to track the prevalence of COVID-19 infections in the communities. To compound the matter, Ubomba-Jaswa and Kalebaila (2020) suggest that COVID 19 has been detected in sewer. EHPs and Scientific services had to closely monitor and put control measures. Contrary, this was used to identify hotspots areas and measure the extent of the spread of the disease.

Staff capacity and safety fears
As EHPs are at the frontline of this pandemic, they have to overcome tremendous fear of contracting the disease and to put on a brave face. Therefore, it is worth noting that this critical role played by EHPs in protecting public health comes at a cost. Some of them presented with illnesses such as depression, fatigue and burn-out due to high workload. This assertion is supported by a study by Wang et al, 2020, where they analyzed the impact of COVID19 on mental disorders. A high correlation was found between burnout and depression. This was further exacerbated by the lack of appropriate personal protective clothing to protect them against COVID-19 and this increased their risk of infection.

Furthermore, the above problem was worsened by the demands of COVID-19 which overstretched the limited human resources that environmental health providers have at their disposal. A typical example is, the current skewed ratio of EHPs to the population is 1: 18 425 (City of Cape Town, 2019) which exceeds the WHO ratio of 1:10 000. Despite this, EHPs were tasked with the additional responsibility of tracing COVID-19 cases and contacts without additional resources, severely affecting their routine work.

Emergency new role: Dealing with Humanitarian crises
Dealing with humanitarian aid is not the forte of Environmental Health Practitioners but, during this pandemic, this cadre of professionals find themselves dealing with displaced vulnerable people. As they are not accustomed to dealing with humanitarian crises, they need special training to understand the circumstances surrounding these vulnerable people and EHPs find themselves wanting as they lack training in this regard. Humanitarian aid work laid a new groundwork for the EHPs for this new role to be part of their curriculum training.

CONCLUSIONS
The fundamental development of a profession is influenced by perceptions, how it conducts itself, and how it contributes to the general welfare of the society. The outbreak of COVID-19 offered a unique

opportunity for EHPs to display how adaptive and resilient they are when confronted with a catastrophic event. The combination of these intervention strategies render Environmental Health Practitioners to be a formidable workforce. These interventions invoked adaptive leadership and resilience approaches; hence, a dynamic and flexible workforce is paramount during these difficult times of a pandemic.

Safeguarding the health of the public during the period of the pandemic was a defining moment for the EHPs as they learnt new ideas and actions, and this proved that they are the pillars of the health system of a country. The above, has validated that Environmental health as a frontline of defense in disease prevention in the society especially during pandemics.

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"How can we use the social and cultural determinants of health to reduce the smoking rates of Aboriginal and Torres Strait Islander women both during and after pregnancy?"

Author: Marwa S Fahiz, ANU Medical School

Tobacco smoking has been recognised as the most significant preventable risk factor for adverse pregnancy and infant health outcomes (Passey et al., 2013a). Smoking during pregnancy increases the risk of birth complications and is linked to miscarriages, infertility, premature birth, stillbirth, cleft lip and palate, SIDS, low birth weight, failure to thrive and cognitive impairment (Bar-Zeev et al., 2017c; Daly et al., 2021; Gilbert et al., 2021; Lie et al., 2008). This causes detrimental effects on a mass scale; with prolonged hospital stay, and a greater reliance on specialist care and resources, thereby increasing economic and workforce pressures. Despite declining rates of reported antenatal smoking in Australia since 2008, Aboriginal and Torres Strait Islander women* experience disproportionately higher rates of smoking (45%) than non-Indigenous women (~12%) during pregnancy (AIHW, 2018; Daly et al., 2021). Consequently, there remains a significant gap in pregnancy and childbirth outcomes in Aboriginal and Torres Strait Islander women as compared to non-Indigenous women.

The 'Closing the Gap' campaign focuses on improving the health outcomes and opportunities of Indigenous Australians. The promotion of infant health and reduction of childhood mortality is of utmost importance, as it provides an equitable foundation for Aboriginal and Torres Strait Islander peoples (Bovill et al., 2019). However, the lack of adequate and timely antenatal and smoking cessation care (SCC) remains a challenge for Indigenous health in Australia (Daly et al., 2021). Despite policy efforts, little improvement in smoking rates during pregnancy have been observed. Therefore, the delivery of targeted, culturally appropriate, and evidence-based antenatal care is essential to bridge the gap of inequity in Indigenous communities (Gibson-Helm et al., 2018; Kildea et al., 2017). This essay will explore a holistic, contemporary approach to targeting smoking rates in Indigenous women. This begins by acknowledging the social and cultural determinants of health for the provision of culturally appropriate care, the upskilling of clinical staff to provide such care, and utilising community and social support to further overcome these barriers.

Identifying the social and cultural determinants of health is essential for the provision of effective, engaging, and appropriate antenatal support from health care practitioners (HCPs). Indigenous women experience unique barriers associated with smoking cessation. A lack of participation in antenatal and preventative programs has been observed among Indigenous women; a trend which increases with remoteness and reduced access (Simpson et al., 2020). Disadvantages in education, transportation, social support (from family and community) and language barriers are several obstacles preventing Indigenous women from seeking SCC and antenatal care. Additionally, feelings of shame, apprehension, or uncertainty further prevent or delay presentation to SCC and antenatal programs (Daly et al., 2021; Simpson et al., 2020). These issues particularly impact young Indigenous women during their first pregnancies (Bar-Zeev et al., 2017b). Inconsistency in advice and poor cultural competency from HCPs discourage the use of health care that is made available. Several solutions to these issues are outlined by Simpson et al. (2020) and Brown et al. (2016): the option to visit the same HCPs may improve continuity of care, build trust, rapport and reduce stress. This may be challenging for Indigenous women residing in rural/remote locations. Thus, telehealth services and transportation to antenatal clinics should be utilised where possible. Providing home visits from midwives and supporting "birthing on country" are accommodations that reduce the need for

relocation, and respects the Indigenous beliefs of connection to country (Bovill et al., 2019). When available, access to these services may help overcome barriers to receiving antenatal care. Overall, creating a model of care that considers Indigenous women's cultural and social needs may improve acceptance of care and successful smoking cessation (Daly et al., 2021).

To improve the success of smoking cessation programs, there is a need for an appropriately trained workforce for Indigenous healthcare. HCPs – including GPs, midwives, nurses, and specialists – may require additional upskilling to ensure a high-standard of care. Firstly, asking women about their smoking status is essential so that treatment and referral opportunities are not delayed or missed (Hendrick et al., 2017). Additionally, provision of non-pharmacological methods such as behavioural counselling is essential, as it helps process the psychological factors associated with smoking (Bovill et al., 2019).

Clinicians should be competent and up to date with treatment methods, so that preventative care is in effect. Specialised cessation support should be included within antenatal care to increase awareness and normalise attendance at SCC appointments (Daly et al., 2021). Bar-Zeev et al. (2017a) found that HCPs lack confidence with the provision and management of smoking cessation support, noting a lack of knowledge about safe, available treatment options and difficulty starting the conversation with patients as the main causes. The use of nicotine replacement treatment (NRT) is controversial during pregnancy, as there lacks a strong evidence base regarding the safety, efficacy and prescription protocols. The safety of bupropion and varenicline during pregnancy are also inconclusive (Hendrick et al., 2017). Therefore, doctors may be hesitant to prescribe medications to pregnant women with tobacco addiction (Bar-Zeev et al., 2018).

However, a large cohort study by Tran et al. (2020) found no increased risk in birth complications after NRT, bupropion or varenicline after adjusting for maternal smoking habits – Varenicline was found to significantly reduce birth complications. Its protective effects may be attributed to earlier smoking cessation, which significantly lowers risk of preterm births (Tran et al., 2020). Thus, clinicians should be educated about offering pharmacotherapeutics when the benefits outweigh the risks, and when non-pharmacological attempts fail (Bar-Zeev et al., 2018). This requires more awareness and training to prepare clinicians for identifying cases where pharmacological assistance is warranted and to ensure supervision and follow-up care is always provided (Bar-Zeev et al., 2017b; Bar-Zeev et al., 2018; Tzelepis et al., 2017). Therefore, there is a need for a framework that provides both general and specialist care effectively to Indigenous women.

Working with Indigenous communities to challenge social norms and improve awareness is essential for improving utilisation of health care services. Fostering community engagement and creating support networks amongst Indigenous communities may address the contextual and social factors involved with smoking. Additionally, provision of innovative, culturally appropriate and effective delivery of health information is essential for communicating with Indigenous communities. Health and medical information should be tailored using innovative, visual and interactive resources. Factors such as the readability level, visual appearance and organisation of information should also be considered. Previously, a high reliance on Quitline referral has been found to be ineffective and poorly utilised by Indigenous women (Daly et al., 2021; Passey et al., 2013b). This may be in part due to the lack of engagement and building of rapport. Informative videos, brochures, visual media and personal stories are more engaging options (Bar-Zeev et al., 2017c; Bovill et al., 2019). At the individual level, smoking may be a means to cope with stress for the woman. Therefore, fostering community-based and social activities to cope with stress in an alternative way may be helpful (Gibson-Helm et al., 2018). Families and partners should also be encouraged to attend SCC, as it improves cessation rates and reduces exposure to environmental smoke (Bovill et al., 2019; Eades et al., 2012; Passey et al., 2013b). Challenging the social norms, myths and misconceptions that are often passed down generations requires more than a single patient-clinician interaction. Increasing community-wide knowledge through involvement of spokespersons and Elders may support women with making the choice to quit. Support/talk groups for young and expecting mothers provide an opportunity to clarify knowledge and open a dialogue about smoking (Bovill et al., 2019).

In summary, there remains a significant gap between Indigenous and non-Indigenous smoking rates during pregnancy, which is highlighted by the literature. This disparity increases the morbidity and mortality rates amongst infants and causes significant burden on the medical system in Australia. In order to provide equitable health and opportunity for Aboriginal and Torres Strait Islander people, it is evident that more holistic and targeted approaches are required to address the persisting issue of smoking during pregnancy among Indigenous women. Understanding and addressing the social and cultural determinants of health is the first step to effective policymaking and change in outcome. This requires upskilling of staff and specialists to develop competency and provide continuity of care. Working alongside Indigenous communities and realising the advantages of social connections are also fundamental. To produce a well-grounded framework, the values of both the Indigenous communities and medical system need to be integrated. Therefore, there is a great scope for reconciliation and health for Indigenous children and families.

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Australian Healthcare policy provides equal and accessible health services for refugees and asylum seekers arriving and living in Australia. Critically discuss.

By Bridie Swingler, ANU Medical School

The healthcare policies of Australia provide a framework to address the priorities of the nation and are a measure by which Australia will be judged for its treatment of asylum seekers and refugees (Department of Health, 2018). Under present federal government policy, thousands of individuals seek political asylum within the Australian community and over 800,000 refugees have been accepted and resettled in Australia since 1945 (Department of Home Affairs, 2021). As a result, asylum seekers and refugees form a unique yet significant sector in the population of the nation. The ensuing need for the development and improvement of a healthcare policy specific to asylum seekers and refugees glares exigently in the face of policy makers. The creation a of policy that provides asylum seekers with access to the national Medicare insurance scheme stands as a pressing concern, where a lack there of results in individuals being left unsupported and trapped outside of a health system for largely political purposes, intended to create a disincentive to those wishing to resettle in Australia (Johnston, 2009). While piecemeal policy does exist to address the unique needs of those seeking asylum and recognised refugees, it exists on at a state governmental level, prompting the need for a truly universal and national health policy to overcome the diverse barriers unique to these Australian arrivals (Correa-Velez *et al*., 2005).

The national health policy claims that health care is affordable and accessible to all Australians, although the legislative framework provides restricted access to refugee and asylum seekers (Department of Health, 2021). At the root of the Australian healthcare system, the Medicare universal health care scheme provides access to medical services, public hospitals and medicines (Department of Health, 2021). In the scheme's policy, access eligibility is limited to those who hold Australian citizenship, or who have been issued with a permanent visa or hold permanent residency (Services Australia, 2022). In Addition, once an asylum seeker claims refuge, they too are deemed eligible (Department of Human Services, 2012). However, for those seeking asylum with pending applications, access to Medicare proves difficult. In accordance with the Medicare health care scheme policy, for asylum seekers who await with entry visas or have expired bridging visas (BVE), government subsidy of medical services is not sanctioned (Correa-Velez *et al*., 2005). This leaves a grand proportion of the asylum seeker population in Australia without the fundamental right to healthcare. Even for asylum seekers who hold a BVE, the lack of policy to support these individuals means that health care access is disrupted and challenging (Correa-Velez *et al*., 2005). While a BVE is only valid for 28 days and application for a new Medicare card is required with each new visa, often asylum seekers will only receive their Medicare card and subsequent healthcare access just days prior to the expiry of their BVE (Department of Health, 2014). Without effective health policy to support these individuals, asylum seekers are forced into a red tape dead end trying to adhere to government policy and requirements.

The definition of an asylum seeker is a person who seeks protection for fear of ''human rights violations'' (Australian Human Rights Commission, 2012). To deny an asylum seeker healthcare, directly conflicts with the Australian Human Rights Commission Act which provides that health is an essential human right, as well as with the World Health Organisation

constitution (1946) which provides that ''the enjoyment of the highest attainable standard of health is one of the fundamental rights of every human being'' (Australian Human Rights Commission, 2021; World Health Organisation, 2017). Thus, the gap in health policy for the provision of equal healthcare to all people in Australia, including asylum seekers, emerges as a human rights violation.

While the federal government has demonstrated its ability to modify health policy to allow access to healthcare for visitors to Australia in its Reciprocal Health Care Agreements (RHCA), it blatantly ignores the significant need of asylum seekers (Services Australia, 2022). The eleven countries included in the RHCA, allow subsidised health services to visitors to Australia, excluding the top ten

countries from which people come to Australia seeking asylum Services Australia, 2022; Parliament of Australia, 2016). These people may be in the most need of healthcare due to the circumstances of the homeland they have been forced to flee. In the absence of a health policy that allows for fundamental access to the so-called universal Medicare scheme, asylum seekers are one of the most disadvantaged populations in Australia (Johnston, 2009).

Despite the paucity of healthcare for asylum seekers pursuing refuge in Australia, the grant of refugee status and access to Medicare occurs concurrently (Department of Human Services, 2012). This means that once approved by the Department of Immigration and Citizenship (DIAC) or the Refugee Review Tribunal, the newly classified refugees are granted the same entitlements to the Australian Medicare health system as permanent residents (Department of Human Services, 2012). In addition, isolated events of policy development from state governments work to improve the healthcare access for asylum seekers. This is exemplified in the Queensland Government's 2017 announcement (and accompanying legislation) to provide asylum seekers, ineligible to access Medicare, access to free-of-charge yet limited public health facilities (Queensland Health, 2020). This policy provides services via alternative funding routes, directing costs to the Department of Home Affairs, International Health and Medical Services and by way of the Status Resolution Support Services (Queensland Health, 2020). Another isolated governmental initiative, the Refugee Health Assessment Medicare Item outlines the Refugee Health Assessment offered to accepted refugees (Department of Health, 2018). An example of primary healthcare policy, this assessment provides the essential initial care of refugees who may require services to combat the urgent and long-term physical and mental health needs they may acquire over their displacement journey refugees (Department of Health, 2018). Although rare legislative schemes exist, policy that supports refugee healthcare is anomalous and merely chimerical for asylum seekers.

It is important to note that even when policy is created to provide healthcare services to these vulnerable populations, a plethora of challenges remain unaddressed. New arrivals to Australia may tackle language and cultural barriers, rendering simple daily communication problematic, let alone when interacting within the adventitious medical sphere (Queensland Health, 2020). While there exists state-based healthcare interpreter policy such as NSW Standard Procedures for Working with Health Care Interpreters Policy Directive and Victoria's Language Services Policy, what lacks is a national scheme to provide qualified interpreters who are certified in communicating with refugee and asylum seeker populations apropos the healthcare system and health needs of these individuals (NSW Government, 2017; Government of Victoria, 2019). Further, refugees and asylum seekers often suffer from a complete lack of comprehension regarding the Australian healthcare system, or conversely, are encumbered with foreign information overload (Queensland Health, 2020). To overcome these challenges, modification of existing refugee and asylum seekers policy such as The Refugee Leadership Strategy 2017-2019, to include Australian healthcare and health system education would provide these people with the knowledge and confidence to access these services and advancing their overall health literacy (NSW Government, 2022). This policy however should extend its focus, targeting rather the healthcare professionals of Australia. The development of policy frameworks that guarantee the education of and resources for professionals to competently communicate, understand and deliver healthcare services to refugee and asylum seeker groups presents as just as vital.

While limited health policy exists to support asylum seeker and refugee access to the Australian healthcare system, a national and universal scheme remains absent. Federal health policy that addresses the unique hurdles experienced by these populations will ensure the maintenance of the essential human right to health.

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‘Compare the equity of access to primary healthcare in metropolitan versus remote regions and deduce areas of potential improvement’

By Jasmine Lenta, ANU Medical School

Although a large amount of Australia’s population experiences adequate primary healthcare (PHC), it’s seen that a substantial percentage of Australia’s remote community experience poorer health outcomes in comparison to metropolitan counterparts. Mortality rates, a leading indicator of health in a population, are considerably higher in remote areas than in major cities (Bourke et al., 2021). This reflects the prevalence of socioeconomically disadvantaged residents with higher health burdens and the unbalanced access to primary health care services for remote areas. Due to the differing nature and priority of health needs between different geological areas, people at all health system levels must have equitable access to the PHC system at any given time. Due to extensive evidence determining that good primary health care is directly associated with better health outcomes and Australia’s diverse geography, the health disparities will be addressed to highlight critical areas of potential improvement.

Many influencing factors contribute to the divide between access to PHC in remote areas and urbanised cities. Remote areas can be defined as areas located away from densely packed areas, in sparsely populated areas (Institute, 2022). These communities are characterised by extreme isolation often with a high level of indigenous Australians (Larkins et al., 2011). Metropolitan areas, however, are considered communities with more than 100 000 residents (Institute, 2022). Although Australia’s most recent health reform process seeks to ensure that all Australians living in remote areas receive both affordable and high-quality primary health care services, there is still a substantial divide attributed to many different reasons (Rural and Urban Health - Health Policy Institute, 2022). This divide is accredited to Australian policymakers facing considerable problems regarding the lack of locally available services in remote areas due to an insufficient workforce, long distances, inadequate infrastructure, and equipment (Rural and Urban Health - Health Policy Institute, 2022).

Unlike metropolitan areas, remote regions currently face significant access issues associated with the undersupply and maldistribution of PHC workers (Wakerman et al., 2019). In these remote regions, the PHC workers consist of community-based area nurses and aboriginal health practitioners (The great health divide: Why rural Australians have poorer health outcomes than their urban counterparts - Western Alliance, 2022). This is only slightly supported by allied health staff from urban areas (Carey et al., 2013). This problem regarding the lack of workers in remote areas can be seen through the high staff turnover rate in the 53 government remote clinics from 2013-to 2015. Only 20% of PHC nurses remained working at the same remote clinics, half leaving before 4-months (Thomas, Wakerman and Humphreys, 2016). This causes a decrease in service quality, associated with the increasing use of short-term staff. Contrastingly in a more urban environment, PHC workers are more inclined to stay in their field of work due to the enhanced working conditions, such as a broader range of accessible medicine and facilities (Thomas, Wakerman and Humphreys, 2016). Further, most PHC workers in urban areas have greater comfort in their roles due to the familiarity of their positions with more advanced, proficient services and medical technology available (Pourali et al., 2022). Therefore, it can be seen that optimal remote health workforce stability is required to prevent the excessive rates of turnover and shortage of workers.

Remote and urbanised areas have a prominent contrast regarding issues of funding and locational disturbances. Poorer health outcomes have been linked in remote areas due to more people have high-risk jobs combined with fewer primary health care services being in locations that are easily accessible (Pourali et al., 2022). Remote communities rely on having more general practitioners (GPs) to provide health care services due to the lack of specialised doctors (Smith, Humphreys and Wilson, 2008). It was recorded by the Australian Bureau of Statistics in 2016 that 58% of people reported not having a GP nearby whereas 6.0% reported this in urban cities (Smith, Humphreys and Wilson, 2008). Due to this locational disturbance, many remote residents disregard health problems, leading to higher health problems in the future. This problem is also heightened by the funding for remote versus

urban PHC. The national remote health alliance reported a ‘remote health deficiency’ that was almost $2.1 billion (Wakerman et al., 2019). This mirrors the underspending towards doctors, dentists and pharmacists in remote areas and the mass overspending of health services in urban areas. Unlike metropolitan areas, remote communities require funding for advanced medical technology to provide quality care. This further indicates that funding for more staff and facilities cause wait times to be extensive in remote areas, 6.0 days to see a GP compared to 2.6 days in metropolitan areas (Wakerman et al., 2019). This highlights a significant disparency in the Australian health care system.

To combat these problems and therefore improve the equity of access, jurisdictions have articulated health strategies for remote communities to make PHC services more available (Smith, Humphreys and Wilson, 2008). Evidence-based interventions have suggested that appropriate training, education, and targeted enrolment can combat the high turnover rates and undersupply of PHC workers (Bourke et al., 2021). Educating health care professionals is considered a fundamental step in solving this problem. Evidence supporting education for
remote health workers relates to the ‘integrated remote medical pipeline’, which is being developed to ameliorate the geographical maldistribution of PHC workers (Bourke et al., 2021). The pipeline components aim to independently contribute to increasing remote practice and retention of doctors in these areas. This includes prioritising applicants with a remote background and providing pathways to ensure doctors are equipped to handle the demand of remote healthcare (Bourke et al., 2021). Financial support could be suggested to students interested in remote care to secure more health workers.

Another area of improvement regarding funding and geological issues could be for resident health workers to guide policymakers and service planners who oversee the allocation of resources and funding for primary health care services (Thomas, Wakerman and Humphreys, 2016). This can help develop a systematic approach to create workforce strategies that can address gaps in service provisions and the remote maldistribution of workers. This can a so include training of generalists instead of just specialists, ensuring more means of support are available in these smaller communities (Thomas, Wakerman and Humphreys, 2016). Providing more infrastructure would be the primary concern that would also be addressed. Furthermore, strategies for better allocation of money towards facilitating evolving technology in remote areas such as tele-radiology, e-health and telehealth and the flying doctor service all combat the issues of having less infrastructure situated in these remote areas (Institute, 2022). More equitable access to these PHC services and facilities will further reduce preventable illnesses hospitalisations and therefore lower the mortality rates.

Residents living in remote communities are still experiencing poorer health outcomes than residents in metropolitan areas, which can be avoided by improving access to PHC services. A step towards ensuring equity in the access to primary health services and addressing the, issue of being understaffed and high turnover rates would be to provide education for current and future remote staff through the ‘integrated remote pipeline’. To combat funding, and locational issues for remote communities, resident health workers should work with policymakers to better allocate funding towards equipment and having readily available resources. By improving these areas of unbalance between remote and metropolitan areas, and implementing these possible solutions, the issue regarding equity is slowly able to be resolved.

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Could government implementation of a sugar tax in Australia contribute to reducing the health impacts of the current obesity epidemic?

By Ruby White, ANU Medical School

The claim ‘Australia is now living in an obesity epidemic’, is well supported, with two-thirds (67.0%) of Australian adults defined as obese (12.5 million people or 1 in 4) (Australian Bureau of Statistics, 2018). Traditionally, Australia’s health policy has emphasised individual responsibility for personal health and wellbeing (Australian Government Department of Health, 2021). However, the recent acknowledgment of broader contextual factors has raised discussions about a new health initiative - the introduction of an additional 20% tax on sugar-sweetened beverages (SSB).[1] This essay discusses the benefits of a SSB tax on reducing obesity in Australia, highlights the global support and potential economic benefits of an SSB tax and demonstrates evidence of success through examination of other countries SSB taxes.

The primary motivation for taxing SSBs is to decrease purchase and consumption rates, with the ultimate aim of reducing Australia’s obesity epidemic. Results from Australia's 2017 obesity policy assessment, highlighted 52% of consumers exceeded the World Health Organisations (WHO) recommended SSBs intake, averaging 60 grams (14 teaspoons) of sugar per day (World Health Organization, 2015). This significant intake has caused major concern as expressed by several governing bodies, some including but not limited to; The Australian Medical Association (AMA), World Health Organisation (WHO) and Cancer Council Australia (Duckett, 2018). Additionally, the SSB tax has received nationwide support with 77% of Australians in agreement, however, it is important to note this figure relies on the proceeds being redirected back into the healthcare system (Obesity Evidence Hub, 2022).

Fiscal policies, specifically excise taxes, have a strong contribution to health care, however, have continuously been underappreciated in Australia. A 2019 report indicated the financial costs of the obesity epidemic to be in the order of $11.8 billion and at the current rate by 2032 are estimated to reach $87.7 billion (Australian Institute of Health and Welfare, 2020). Obesity has other economic implications; increasing health care use, reducing workforce participation and contributing to other life-threatening illnesses such as cancer. Implementation of a 20% SSB tax has a cost-saving potential of $1.7 billion and a gain of 175,300 health-adjusted life years (Ananthapavan et al. 2018). Furthermore, an AMA study predicted that such a tax would lead to an 18% reduction in SSBs consumption and raise annual government revenue to $814 million (Australian Medical Association, 2021).

The possible benefits of an SSB tax could be extrapolated by an analysis of the 2010 implementation of the Australian tobacco tax. The tobacco tax was successful in its objective, with consumption significantly declining from 24.3% in 1991 to 12.8% in 2013 (Hirono & Smith, 2017). Furthermore, the likelihood of young people quitting smoking went from 34% in 1995 to 75% in 2017-18 (Hirono & Smith, 2017). If the SSB tax follows a similar trajectory, from an economic perspective, things look promising. It is important to note that other policies contributed to the success of the tobacco tax, including restrictions on indoor smoking and public advertising campaigns. The SSB tax appears to have considerable potential, however, its effectiveness would rely on the implementation of a range of other measures. Furthermore, the economic benefits of this initiative lay largely in the hands of the government and it is important that revenue gained returns to the healthcare system.

Adoption of an SSB tax can be supported by other countries' achievements, with over 50 countries implementing such a tax successfully (Obesity Evidence Hub, 2022). For example, Mexico implemented an 11% SSB tax and subsequently recorded a 45% decrease in SSB purchases, with a 10 year prediction that the tax would prevent 239,900 cases of obesity and avoid 5,840 disability-adjusted life-years (Basto-Abreu et al. 2019). The United Kingdom (UK) provides another example of successful SSB taxation known as a tiered tax, which witnessed manufacturers implement a reformulation of their products. The reformulation resulted in the removal of 45 million kg of sugar

from SSBs annually. Furthermore, between 2015-19, the percentage of drinks in supermarkets with a sugar content of more than 5g per 100 mL fell from 49% to 15% (Scarborough et al. 2020). These results showed that such a tax is beneficial without harming the industry. Furthermore, the profit can be redistributed into other initiatives, helping to reduce obesity, much like the UK did with the funding of physical activity in schools (Scarborough et al. 2020). Figure 1 is a modelling example, highlighting the effect a SSB tax would have for Australia if it followed the UK method. Results look promising with an annual reduction of 90,000 tonnes of population sugar consumption and an annual revenue of $600 million (Australian Medical Association, 2021).

Figure 1.
(The Australian Medical Association, 2021)

Figure 6: Sugar consumed from beverages (all soft drinks) at a population level before and after introduction of the tax, showing modelled outcome for Australia if average reduction in sugar content matched the post-tax UK level.

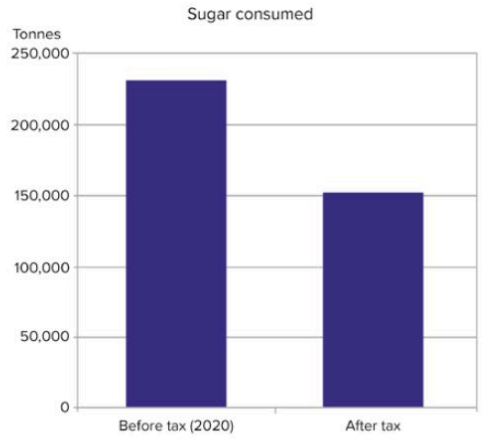
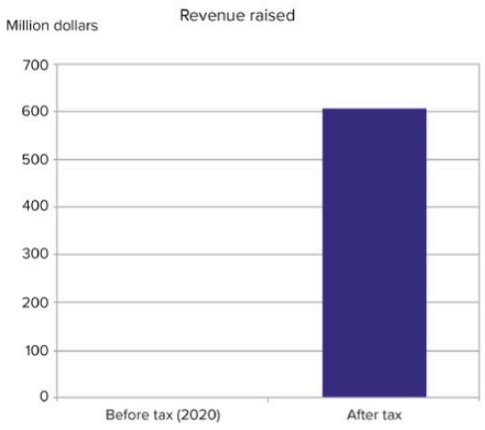


Figure 7: Annual revenue raised from SSBs subject to the tax before and after its introduction, showing modelled outcome for Australia if average reduction in sugar content matched the post-tax UK level.



Despite the apparent benefits of Australia implementing a SSB tax, the disadvantages associated with such a policy cannot go unnoticed. Lower socio-economic groups, being greater consumers of SSBs, would be proportionately taxed at higher rates than more wealthy groups. Ironically, they stand to benefit the most from a health perspective than other social groups. Being more price-sensitive towards SSBs, they are more likely to reduce their consumption and subsequently decrease their already higher rates of obesity and nutritional diseases. This outcome is supported by research from a range of low-middle income countries such as Chile who have implemented a SSB tax and then witnessed citizens from lower socio-economic classes positively alter their health behaviours (Obesity Evidence Hub, 2022). Additionally, any socio-economic characteristics of a health levy on SSBs could be overcome by using revenue gained to fund initiatives and programs with a focus on Australians of low socio-economic position.

The economic impact of the introduction of an SSB tax is a concern raised by the sugar cane industry. However, the SSB tax has the likelihood of reducing domestic demand for Australian sugar by approximately 50,000 tonnes, only about 1% of Australia's sugar production (Australian Medical Association, 2021). While there may be some transition costs, this sugar could instead be sold overseas, as 80% of Australia's sugar production already is (Australian Medical Association, 2021). Furthermore, AMA President, Dr Khorshid, explained that sugar cane farmers were also not likely to be impacted, as only 20% of their total production is consumed in Australia with 5.3% going towards domestic SSBs manufacturing (Australian Medical Association, 2021). The estimated change resulting from a drop in consumption due to the tax is only a fraction (0.64%) of total industry production (Australian Medical Association, 2021).

From an economic, governmental and societal perspective, it is evident that the introduction of an Australian SSB tax has high potential to reduce obesity rates and increase prosperity for the health care system. The literature and social support is prosperous, identifying the reduction of burden on the health care system and the possible revenue that could be generated. Furthermore, the analysis of successful implementation by other countries greatly increases the likelihood of success. It is important to highlight that although the SSB tax has great potential, such an initiative needs to be implemented in conjunction with behavioural and other policy determinants if the ultimate goal is to fight Australia's obesity epidemic.

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[1] 20% was suggested by the Australian Medical Association.

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Critically discuss the case for introducing a tax on sugar sweetened beverages in Australia.

By Claudia Petrie, ANU Medical School

Government intervention via corrective or 'sin' taxes is a health policy measure that aims to improve health outcomes and wellbeing by minimising the gap between the perceived and actual costs of consumption (Cabrera Escobar, Veerman, Tollman, Bertram, & Hofman, 2013; Griffith, O'Connell, & Smith, 2017). One policy that has garnered attention in Australia is the potential introduction of a sales tax on sugar sweetened beverages (SSB) (Lal et al., 2017; Obesity Policy Coalition, 2019). A tax on SSBs would aim to reduce the burden of noncommunicable diseases (NCD), such as obesity and diabetes, on the healthcare system by reducing sugar intake (Choy et al., 2013; Obesity Policy Coalition, 2019). The literature provides a compelling case for the implementation of the SSB tax namely, that it will reduce SSB consumption and thereby improve health outcomes, will encourage industry reformulation, and will generate significant health expenditure savings. Key criticisms include the potential impact of cross-price elasticises, the inability of the tax to consider consumer differences, its nature as a regressive tax, and that it threatens consumer freedoms. While arguments against a SSB tax must be considered, they have largely been countered by health studies and the experiences of the introduction of similar policy initiatives overseas.

Arguably the greatest strength of the SSB tax is that it has been shown in modelling to reduce sugar consumption and as a result improve health outcomes. It is well established in the literature that there is a significant correlation between SSB intake and BMI (Cabrera Escobar et al., 2013; Hu, 2013; Malik, Popkin, Bray, Després, & Hu, 2010). According to the AIHW, an estimated 2 in 3 Australians have a BMI classified as overweight or obese with the Grattan Institute attributing around 10% of Australia's obesity problem to the consumption of SSBs (Australian Institute of Health Welfare, 2020; Duckett, Swerissen, & Wiltshire, 2016). A modelling study using Australian price elasticity estimates, found that a 20% tax on SSBs would result in a 12.6% decline in daily SSB consumption on average, which over a lifetime translates to a decline in obesity of 2.7% in men and 1.2% in women (Veerman, Sacks, Antonopoulos, & Martin, 2016). Additionally, as can be seen in figure 1, there would be a significant reduction in the incidence of NCD, contributing to an increase in health-adjusted life years (HALY) of 112,000 for men and 56,000 for women (Veerman et al., 2016).

A SSB tax is an economically viable national health strategy as it would generate significant revenue and offset health expenditure costs. In their 2017 report, the World Health Organisation (WHO) recommended "the reduction of sugar consumption through effective taxation on sugar-sweetened beverages" as a highly cost-effective intervention for the prevention and control of NCD (World Health Organization, 2017). Modelling of an excise tax in Australia by the Grattan Institute (see figure 2) aligns with this view, finding that a tax on SSB would raise $400-500 million in revenue and reduce SSB consumption by 7-10 litres per capita per year (Duckett et al., 2016). Moreover, a 2011-2012 estimate by PricewaterhouseCoopers found obesity related diseases to cost $8.6B in healthcare, forgone tax, and lost productivity (Duckett et al., 2016). Therefore, in addition to revenue raising that could be directed toward health promotion strategies, a reduction in SSB would greatly reduce the

burden of excess sugar intake on the national healthcare system and broader economy.

Moreover, a tax by weight of sugar by volume would promote industry reformulation while avoiding a decline in Australia's sugarcane industry, as only 5.3% of production is used in domestic SSB manufacture (The Australian Medical Association, 2021). This effect is evident in the UK where manufacturers responded to the introduction of a Soft Drinks Industry Levy, which taxes by a drink's sugar concentration, with a 43.7% reduction in the sugar content of SSBs within four years (Public Health England, 2020). Thus, a SSB levy is valuable as it creates a strong incentive to innovate and reformulate products and contributes to a paradigm shift that empowers people to make healthier food choices.

A key criticism of the SSB tax is the potential substitution effect i.e., that consumers will increase their consumption of other high calorie drinks, such as fruit juice, to offset decreased SSB consumption (Cabrera Escobar et al., 2013; Fletcher, Frisvold, & Tefft, 2013; Franck, Grandi, & Eisenberg, 2013). While some authors argue that a tax on SSBs will have no real effect on obesity levels as consumers switch to non-taxed close substitutes, modelling the population impacts of SSB taxes in New Zealand, India, and South Africa has revealed net positive impacts on health despite this effect (Cabrera Escobar et al., 2013; Fletcher et al., 2013; Obesity Policy Coalition, 2019).

Another objection to the regulation of sugar intake via a corrective tax is that it is a blunt policy instrument that affects even those who consume low amounts of sugar (Brownell et al., 2009). The SSB tax fails to consider individual differences in consumer behaviour meaning that some individuals are left worse of as they will incur a higher price for SSBs despite contributing no social or unaccounted for future private cost (Griffith, Lührmann, O'Connell, & Smith, 2016). Despite this conflict, when surveyed 60% of Australians supported a SSB tax which attests to the benefits the scheme provides to society as a whole (The Australian Medical Association, 2021).

A common criticism of excise taxes is that they are regressive in nature. As low-income households spend a greater portion of their disposable income on consumable goods, they will pay a higher proportion of their income in SSB tax than higher earners (Cabrera Escobar et al., 2013; Duckett et al., 2016). A counterargument is raised by Australian modelling studies which found that households in the two lowest income quintiles would experience half of the total health benefit of the tax in the form of healthcare cost savings, meaning that while the most disadvantaged people incur the greatest short-term economic cost they reap more long-term benefit (Cabrera Escobar et al., 2013; Lal et al., 2017). Moreover, the regressive nature of the tax can be further rectified if the revenue collected is redistributed preferentially to lower income households (Griffith et al., 2017).

Introduction of a SSB tax has also generated significant discussion surrounding the role of government in industry. The potential sugar tax has ignited media and public debate, with critics arguing that governments are acting as a 'nanny state' by interfering with consumer autonomy and freedom (Franck et al., 2013; Véliz, Maslen, Essman, Taillie, & Savulescu, 2019). Conversely, in the literature it is argued that this intrusion on consumer liberty is ethically permissible as the government acts as stewards, promoting wellbeing, health, and personal responsibility while alleviating the societal costs of individual's poor nutritional choices (Franck et al., 2013; Véliz et al., 2019). Furthermore, many authors agree that there is a sound economic rationale for government intervention to correct market failures that result in the overconsumption of SSBs (Duckett et al., 2016; Franck et al., 2013).

In conclusion, in line with the Senate Committee's recommendation, there is significant evidence to support the introduction of a tax on SSBs by the Commonwealth Government (Commonwealth of Australia Senate Committee, 2018). Both domestic modelling and international case studies have indicated that a SSB tax is likely to result in significant health gains and healthcare expenditure savings through reducing sugar intake and thereby alleviating the burden of NCD on the healthcare system. Despite criticisms, the SSB tax has the potential to be a powerful tool in Australia's public health nutrition strategy.

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Discuss the benefits and limitations of implementing telehealth to support patients' self-management of Type 2 Diabetes in Australia.

By Rachael Luton, ANU Medical School

To determine the feasibility of utilising telehealth to support patients' management of type 2 diabetes in Australia, both the benefits and the limitations of the technology must be considered. In 2017, over 462 million individuals were affected by type 2 diabetes globally, making it the ninth leading cause of mortality (Khan et al., 2020). Although the rising global burden of type 2 diabetes has prompted public health policy to implement preventative measures (Khan et al., 2020), there is little support and assistance to patients managing the chronic disease (Lee & Lee, 2018). The self-management of type 2 diabetes is multifaceted, with an emphasis on increasing physical activity, altering diet, and managing blood glucose to minimise multimorbidity complications and improve life expectancy (Lee & Lee, 2018). Telehealth offers a potential solution to providing more support and care to patients, allowing for regular monitoring of blood glucose levels and contact between the patient and healthcare professionals, which has been suggested to improve health and clinical outcomes (Lee & Lee, 2018). However, the limitations to telehealth including associated maintenance costs and unequal distribution of technology should be considered before making a judgement regarding the effectiveness of a telehealth program to support patients with type 2 diabetes (Nittari et al., 2020).

It is well understood that a healthy diet and increased physical activity is critical in preventing complications associated with type 2 diabetes (Mayberry et al., 2019), however, implementation of effective, long-term lifestyle changes proves to be a significant challenge for patients (von Storch et al., 2019). Implementing a telehealth program that creates regular conversations between the patient and a healthcare professional can monitor progress and improvements which can motivate individuals to continue lifestyle changes (Zhai et al., 2014). A randomised prospective study involving 2441 type 2 diabetes patients in Germany conducted by von Storch et al. (2019) determined the effect of regular telephone consultations with a healthcare professional to discuss dietary and lifestyle changes. Results after 3 months found that glycated haemoglobin values significantly reduced for the group with telephone consultations compared to the control group (von Storch et al., 2019). The same study found a significant reduction in BMI in the intervention group and no significant change in the control group after 3 months (von Storch et al., 2019). Bingham et al. (2021) suggests an alternative benefit to regular telephone consultations, identifying that regular telephone contact gives patients the opportunity to query diabetic medication concerns or side-effects. Medication nonadherence is

associated with increased healthcare utilisation and increased morbidity and mortality (Bingham et al., 2021). Hofer et al. (2017) suggests that a patients' dissatisfaction with their knowledge of the medication is a large contributor to not taking diabetic medication as prescribed. Hence, regular phone consultations could be beneficial in addressing patients' concerns surrounding their medication through the course of their treatment (Hofer et al., 2017). A study by Bingham et al. (2021) utilised regular telephonic outreach between healthcare professionals and type 2 diabetes patients, finding a significant improvement in medication adherence following telehealth interventions. Hence, evidence shows that regular contact between healthcare professionals and patients via telehealth outreach has the potential to address patients' concerns regarding lifestyle changes and medications, resulting in improved health outcomes (Bingham et al., 2021; von Starch et al., 2019).

Telehealth has the additional benefit of increasing access to healthcare to rural populations, where specialist care would otherwise be distant (Lee & Lee, 2018). The Australian Institute of Health and Welfare (2020) calculated that Australians in remote or very remote areas had diabetes hospitalisations and death rates at least twice as high as major cities. Additionally, diabetic patients from ethnic minorities and from lower socioeconomic status have lower medication adherence (Hofer et al., 2017). Hence, it is crucial to implement a program that can reach these disproportionately disadvantaged populations (Bingham et al., 2021). Telehealth eliminates the need to travel to appointments, allowing individuals in rural locations or those with mobility issues to easily have more frequent contact with specialists (Bingham et al., 2021). Mayberry et al. (2019) highlights an additional benefit of telehealth having no geographical limitations, suggesting that those from culturally or linguistically diverse backgrounds can easily access care in their native language without assistance of an interpreter. The systematic review by Choukou et al. (2021) which analysed the use of digital health technology in older Indigenous Australians found overwhelmingly high levels of acceptance and satisfaction with telehealth technology within this population, with many preferring telehealth over in person consults. This evidence suggests healthcare systems and policy should be reviewed to discuss integrating telehealth as a part of the publicly funded healthcare system to improve health outcomes for Indigenous and linguistically diverse communities (Choukou et al., 2021). Hence, it is evident that telehealth has the benefit of providing healthcare to populations that would otherwise lack access to care.

Despite the potential benefits of telehealth interventions, the barriers to successful implementation should additionally be considered. At present, Internet access remains unavailable to some rural populations who cannot afford such services (Mayberry et al., 2019). Hence, focusing interventions on Internet-delivered programs may widen health disparities (Mayberry et al., 2019). However, given the steadily increasing prevalence of type 2 diabetes, it is possible that the initial start-up and maintenance costs to implement telemedicine in rural areas could be less than the increasing economic pressure on the healthcare system for diabetic medications and diabetes-associated multimorbidity (von Storch et al., 2019; Lee & Lee, 2018). The systematic review by Lee & Lee (2018) analysed the cost-effectiveness of telemedicine programs for diabetes management, however found significant variation in setup and operating costs among studies, despite similar technologies being analysed. Additionally, the literature focuses on short-term term clinical and physiological outcomes of telehealth on type 2 diabetes management, with a significant gap in knowledge of long-term outcomes (Lee & Lee, 2018). Although the research from short-term outcomes is positive, studies focusing on long-term effects should be conducted to better evaluate the ability of telehealth to reduce type 2 diabetes morbidity and mortality (Lee & Lee, 2018). An additional barrier to implementing telehealth highlighted by Mayberry et al. (2019) is that populations of the Australian population, in particular the elderly, lack sufficient technological skills. Hence, to successfully implement a telehealth program, it is the responsibility of universities and training institutions to adequately train health professionals to be able to use technology themselves, as well as guide their patients in using technology platforms (Nittari et al., 2020). Hence, there are some barriers to the successful implementation of telehealth that should be considered.

There are a multitude of potential telehealth applications to provide support to those with type 2 diabetes (Khan et al., 2020). Previous studies have found statistically significant improvements in

blood glucose concentrations, weight loss and medication adherence when type 2 diabetes patients had a series of regular telephone consultations with healthcare professionals (Bingham et al., 2021; von Starch et al., 2019). Telehealth can overcome geographic barriers to care, thus improving health outcomes, especially for rural communities or linguistically diverse individuals (Mayberry et al., 2019; Zhai et al., 2014). However, the initial costs to implement telehealth and delivering technology skills education programs to healthcare professionals and patients are some limitations of successfully utilising telehealth (Khan et al., 2020).

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Do Australia's asylum seeker policies effectively manage the health needs of asylum seekers entering Australia and what improvements can be made?

By Sophie Bulloch, ANU Medical School

Under the United Nations Refugee Convention, Australia is responsible for the resettling and assimilation of a number of humanitarian entrants each year. This includes entrants who claim asylum in Australia without a granted refugee status (The Royal Australasian College of Physicians, 2016). The Australian Human Rights Commission (2022), defines asylum seekers as individuals who have fled their own country due to fear of persecution, and have applied for protection as a refugee but have not yet been granted refugee status. The Status Resolution Support Service (SRSS) is a federal initiative which provides temporary support to asylum seekers and individuals with an unresolved immigration status. The SRSS assesses individual circumstances for need-based support, providing a 'safety-net' for those who are ineligible for mainstream services (Asylum Seeker Resource Centre, 2020). The health of asylum seekers in Australia requires thoughtful and specific policies, due to the host of complex health needs following the psychological and physical stress of forced displacement (Paxton, Cherian, & Zwi, 2015). Nonetheless, those who claim asylum in Australia find their access to necessary health services being gradually restricted, with recent cuts to the program funding proving detrimental to achieving appropriate support (Correa-Velez, Johnston, Kirk, & Ferdinand, 2018).

Immigration status is a significant determinant of health, having been identified as an overt risk factor for psychiatric disorders. (Silove, Steel, McGorry, & Mohan, 1998). Psychiatric disorders emanating from forced exile, war, and threats of persecution require specialised care to aid the complex psychological trauma experienced by individuals who require asylum (Lamb & Smith, 2002). Of the 51637 asylum seekers arriving by boat in Australia between 2009-2013, over 60% presented with a mental condition in their initial evaluation (Paxton, Cherian, & Zwi, 2015). The SRSS was designed to provide individuals with the necessary services for psychological and physiological stability on a need-based approach. Clients of the SRSS are entitled to case management, financial assistance, and access to health services (Refugee Council of Australia, 2021). Notwithstanding this, asylum seeker health and wellbeing is disproportionately low in Australia, with contentions of the government withholding access to necessary services on the ground of migration status (Johnston, 2009). The Royal Australian College of General Practitioners (RACPG)((2015) expressed concern that the government has failed to uphold its obligation to asylum seeker health in both services and standard of living.

Whilst Australia's duty of care towards asylum seekers mental health is a longstanding topic in affairs (Johnston, 2009), 2017 brought the most significant change in protection policies. In 2017 and 2018, the Department of Home Affairs indited a policy change that restricted eligibility criteria for SRSS (Refugee Council Australia, 2019). Asylum seekers who have arrived on a boat without a successful refugee status are ineligible for permanent protection in Australia, providing no relief for safety concerns and uncertainty of forced migration (Lyons, 2019). The change was accompanied by a 60% cut in budget by the Federal Government, reducing the trauma services, subsidized medication, casework, and income support available for asylum seekers in Australia (Asylum Seeker Resource Centre, 2020). These changes have brought about further adverse health effects as a result of prolonged uncertainty and restricted access to appropriate services (Ronan, 2015). Poor health outcomes are exacerbated by inability to meet basic needs, feelings of isolation and barriers to legal placing them at increased risk of self-harm and suicide, regardless of the resolution of their refugee status (Proctor, Kenny, Eaton, & Grech, 2017).

The change of service provisions subsequently placed the responsibility of maintaining asylum seeker livelihood on state and territory governments and welfare organisations. This placed further pressure on service providers and organisational capacities, contributing to existing strain in the system (Murray K. , Meuter, Cox, & Ostapiej-Piatkowski, 2021). State and territory and charity service funding investment into the welfare gaps provide adequate resources for improving health outcomes, however

for essential care to be met it requires legislative changes and reform in the relationship of health care and home affairs (Lyons, 2019).

Action towards improving affordability and access to health care would drastically increase the provision of support necessary for asylum seekers in Australia. This could be achieved through extension of the eligibility of Medicare, a program not afforded to many asylum seekers under relevant policy (Spike, Smith, & Harris, 2011). Currently, the needs that are not covered by Medicare are managed by a range of state policies and pro-bono services providing hospital-based care, however, remains limited in primary care access. Correa-Velez, et al., (2018) found a considerable number of asylum seekers presented to mainstream clinics in Melbourne for psychological and social conditions as they were unable to access government subsidized-health care. Furthermore, those who do meet eligibility conditions have additional challenges of social barriers making optimizing these benefits unfeasible (Spike, Smith, & Harris, 2011). The economic cost of improving this current access and extending eligibility for Medicare-ineligible asylum seekers would, according to estimations by Kardamanindis and Armstrong (2006), account for approximately 0.015% of annual health expenditure in NSW. The expense is negligible when considering the drastic improvement, it poses for asylum seeker health care.

The separation of politics from health care is required for the access of appropriate health services for asylum seekers to be managed in Australian as a humanitarian effort (Murray K. , Meuter, Cox, & Ostapiej-Piatkowski, 2021). Liz Marles (2015), former president of the Royal Australian College of General Practitioners, defined asylum seeker accessibility to appropriate medical services and resources that promote a healthy standard living as ‘a fundamental human right’. Under the United Nations Refugee Convention, Australia is obligated to protect and treat those who claim asylum equally, regardless of status circumstances (Paxton, Cherian, & Zwi, 2015). Moreover, it is the responsibility of public health professionals in Australia to ‘protect and promote’ health amongst all people, specifically those with compromised access to health care (Durham, Brolan, Lui, & Whittaker, 2016) . Major healthcare bodies in Australia, including the Public Health Association of Australia and the Australian Medical Association, condemn policies which promote the inequal health treatment towards those seeking asylum, however regressive policies implemented by the federal government enforce legal restrictions on the services which can be provided (Durham, Brolan, Lui, & Whittaker, 2016). The intersection of health priorities with political priorities is detrimental to the welfare of asylum seekers in Australia, and therefore requires immediate revision. Formation of policy requires increased stakeholders in public health and medical practise in collaboration with the Department of Home affairs to achieve an improved right-based approach to asylum seeker health (Taylor, 2009).

Recognition of Australia’s efforts to accommodate humanitarian entrants is warranted, however the efforts do not place health, specifically mental health, as a policy priority, evident in the legislative changes and restriction of the SRSS (Refugee Council of Australia, 2021). Australia’s current system does not appropriately consider and accommodate for the complex health needs hosted by vulnerable people entering Australia for asylum. By extending eligibility criteria for vulnerable individuals and adopting a rights-based approach, Australia can achieve this policy priority and improve the health profile of asylum seekers in Australia (Johnston, 2009). Health inequalities experienced by asylum seekers, regardless of their legal migration status, is a humanitarian issue rendering immediate revision within Australian Immigration policy (Proctor, Kenny, Eaton, & Grech, 2017).

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DOES THE DIFFERENCE BETWEEN INDIGENOUS AND NON-INDIGENOUS MATERNAL HEALTH CARE CREATE FURTHER DISPARITY?

By Charlotte Ryan, ANU Medical School

Maternal health care is a crucial aspect of health care, for which Australia ranks first in the world for equity and healthcare outcomes (Liotta, 2021). However, representing only 3.3% of Australia's population (AIHW, 2021), Indigenous Australians experience less than equitable health care, especially in maternal health (Ahmac, 2011). This has been partially attributed to a lack of access to health services, both due to distance and financial trouble (Department of Health, 2016). Health issues endemic to the Indigenous population, especially involving substance abuse and smoking, have also hindered the overall health of the Indigenous population (AIHW, 2021). Substance abuse in pregnant Indigenous Australians ensures that future generations will suffer from the same health issues (AGDOH, 2020), continuing the vicious cycle of inequity and disparity. The importance of cultural connection for Indigenous Australian communities has also presented as a barrier to the equitable distribution of maternal healthcare, especially due to the sacredness of birth in Indigenous culture (Pol, 2021). Indigenous culture and practices must be incorporated into healthcare for Indigenous communities to become implemented into the health care system. The lack of accommodation to Indigenous health requirements creates a disparity between Indigenous and non-Indigenous Australians.

Typically residing in rural areas, Indigenous populations face issues regarding access to health care, which can increase the disparity between Indigenous people and the rest of Australia. As many Indigenous communities are located far from key health care facilities, strategies to increase the availability of health care have been implemented, including the relocation of pregnant women to be closer to vital healthcare (Department of Health, 2016). While theoretically sound, this strategy causes cultural and social issues for Indigenous patients, through social dislocation and isolation (Department of Health, 2016). This acts as a deterrent for Indigenous mothers, as the prospect of social issues will prevent women from leaving their community (Pol, 2021), further increasing the disparity between white and Indigenous Australia. For women who are relocated, social dislocation has been identified among stresses proven to harm foetal health (Department of Health, 2016). This will furthermore affect future Indigenous health, due to health implications for future Indigenous generations.

Indigenous Australians also lack financial stability, due to lower wages, lack of education and high rates of unemployment (AIHW, 2017). Due to these financial issues, most Indigenous women will only have access to the public health system (Ahmac, 2011) which prevents any progress in reducing health care inequality, as the private sector of maternal care will continue to appear unattainable.

Due to substance abuse and smoking, Indigenous communities are at a greater risk of health implications (AIHW,2021), which must be addressed if health equality for Indigenous Australians is to be met. Indigenous Australians have much higher rates of smoking, drinking and illicit drug use than non-Indigenous Australians (AIHW, 2021). In 2008, 49.9% of Indigenous Australians were reported to be current smokers, doubling the rates of non-Indigenous Australians (AIHW, 2021). 50% of pregnant Indigenous women engage in smoking, which is four times more likely than a non-Indigenous mother (AIHW, 2017). Just under a quarter of Indigenous expectant mothers also reported alcohol and illicit substance abuse during pregnancy (AIHW, 2017). Alcohol consumption, smoking and drug use during pregnancy are proven to have negative foetal health outcomes including low birth weight, foetal alcohol syndrome and cause birth defects (AIHW, 2021) (AGDOH, 2020). The risk to foetal health suggests continuation of unhealthy substance use will impact the health of future Indigenous generations. However, discontinuation of this behaviour will result in a healthier future population, reducing health disparities to the general population. Campaigns such as 'No More Boondah'- an Indigenous anti-smoking program, targeting pregnant women, and other close the gap initiatives (Winnunga, 2022), are a vital stepping-stone in reducing health disparities between Indigenous and non-Indigenous Australians.

Indigenous culture centres around the physical and spiritual aspects of the Australian bush, with this significance embedded into many practices and beliefs. Indigenous birthing, ‘borning’, is a sacred and spiritual occasion (Pol, 2021). Birthing includes customary practices which are seen as crucial within the Indigenous culture. Indigenous culture separates ‘men’s business’ from ‘women’s business', so men are not involved in the birthing process, and relatives are preferred as midwives (Pol, 2021). This creates difficulty for Indigenous women to have hospital births, as all men must be excluded from the process. Furthermore, Indigenous Australians have a spiritual connection to the earth and prefer to birth their child on the same earth as their ancestors. Additionally, Indigenous Australians view hospitals as a place they go when they are very sick, which can inhibit any positive views regarding clinical healthcare (Pol, 2021).

The importance of the placenta in Indigenous borning is often overlooked by non-Indigenous Australians, however, in some language groups the placenta is viewed as the baby’s soul map, connecting them to their ancestors (Pol, 2021). For this reason, it is buried, and it is believed that if burial does not occur, then the child will grow up without spiritual guidance and is likely to develop mental disorders (Pol, 2021). The amassing of these reasons informs the health care system that health care must be tailored and delivered to the Indigenous communities, to ensure maternal health care is used.

The ’Healthy Mums, Healthy Bubs’ package is working on training local aboriginal people in the safe delivery of babies, as well as growing the maternal workforce (AGDoH, 2021). Incorporating Indigenous practices and locals into the maternal care sector will increase the quality of maternal care, reducing the disparities seen between Indigenous and non-Indigenous communities.

For Australia to have truly equitable maternal healthcare, disparities between Indigenous and non-Indigenous maternal healthcare must be eliminated. Disparities have been found to occur due to a combination of issues. Such issues arise from the unsuitable handling of Indigenous healthcare and an inability to incorporate Indigenous culture into western medicine. Indigenous communities have cultural and societal circumstances which must be taken into consideration. While disparities must be addressed, cultural appropriateness should not be compromised. Hence, adaptations are required to ensure the needs of Indigenous patients, both regarding health and culture, are catered for in the provision of quality healthcare.

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Changing the Cycle: From Period Poverty towards Period Parity

By Wanin Tessema, ANU Medical School

Whatever you decide to call that time of the month, whether it's 'Aunt Flo', 'Code Red' or the 'Red Army', menstruation plays a big role in the experiences of many women and girls all over the world. Yet, menstruation is not experienced equally. Period poverty is a multifaceted leading public health crisis that continues to affect the livelihoods of millions of women and girls all around the world. For what reason could this issue remain so rampant? Although experts speculate the issue of period poverty is mainly rooted in misinformation, stigma, and silencing (Rossouw and Ross, 2021), it comes unsurprising that this great health inequality only affects the livelihoods of women and girls.

The simple luxury of using a period product such as a tampon or pad is virtually unheard of to roughly 1 in 4 women around the world who suffer with period poverty (Xiao and Darmadi, 2020), remaining as a pressing yet hidden public health crisis requiring serious advocacy, dialogue, and initiative. Although the vast public assume that period poverty is the inability to afford basic sanitary protection (Cardoso et al, 2021), it's a complex issue that takes many forms. The lack of menstrual hygiene education, access to sanitary products and sanitation facilities form the foundations of period poverty, and subsequently the misconceptions and stigma associated with menstruation undermines the dignity, health and rights of many women and girls.

Period poverty greatly challenges gender equality and continues to devastate the livelihoods of countless women and girls, as it diminishes bodily integrity, dignity, and life experiences. In all-income nations, lower-SES women and girls disproportionately suffer from period poverty (Cardoso et al, 2021), and the rise of the Covid-19 pandemic has exposed the harsh realities of this burden (PIA, 2021). Along with severe sanitary product shortages, there have been many reports (PIA, 2021) that point to the relationship between menstruation and negative experiences, as it provides as a great source of psychosocial stress and contributes to absenteeism from the workplace and school.

Although wealth and income are key drivers on unequal access to menstrual hygiene management, period poverty is an issue rooted in stigma, misinformation, and gender biases. Menstruation is a very natural biological process for most women, yet it's considered impure and dirty, and many women are excluded from participating in daily activities or religious practices. The taboo and stigma attached to period poverty forms a culture of silence (Rossouw and Ross, 2021), subsequently leading to limited available education on menstrual hygiene and misinformation. The cultural notions of shame, uncleanliness and indignity surrounding menstrual health avert dialogues on access and safety. What seems to be a very simple issue easily solved by simply providing free sanitary products, is truly an issue that must address great gender biases that avert the healthcare of women.

Although the solution to period poverty is often reduced to just allowing access to more affordable hygiene products and removing taxes on hygienic products (such as the 'tampon tax'), this is not the case. Whilst these measures do address the issue, overcoming the issue of period poverty is a far more nuanced and complicated than just providing free products. It is not simply an issue of accessibility of sanitary products, but one of demystifying the stigmas and misconceptions surrounding menstrual health. Advocacy on period poverty is crucial as it vocalises the issue and normalises conversations about periods to reduce stigma. There are numerous not-for-profit organisations that have ongoing initiatives to support menstrual health advocacy, such WASH programs placed in rural communities across the world (Astrup, 2018), and these initiatives have tremendously removed the burden of period poverty for countless women and girls. The building of a coalition of advocates, particularly within the medical community, better targets interventions focused on removing stigma and taboo, especially in communities in lower-SES areas with limited resources. Public health advocacy initiatives need to prioritise the influx of misinformation and stigma surrounding period poverty through proper education regimes.

Nonetheless, the burden of period poverty should not be solely put on non-for-profit organisations. From a public health point of view, the access to sanitary product is a basic human right. How can an issue that puts the wellbeing of so many lives at stake fall through the gaps? This is further illustrated by how menstrual health has been omitted by the UN Sustainable Development Goals (Lancet, 2020), proving how deadly the culture of silence surrounding menstrual health advocacy truly is. Government initiatives need to focus on menstrual health empowerment, which requires the collaboration of policymakers, governments, health-care professionals, and the public. Widening the little literature available on period poverty is imperative, as it is quite extraordinary that although millions of women suffer under this burden, there has never been a big body of available data. Period poverty, an issue of accessibility, women's dignity, and the demystifying of stigmas, and is an ever-rampant issue that requires immediate and enormous action. It's time for a call of action to better care for all the women and girls who sustain all life on this planet. Period.

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Is the implementation of the National Immunisation Program to increase vaccination coverage sufficient in reducing the burden of vaccine-preventable diseases in the Aboriginal and Torres Strait Islander population?

By Theresia Klarissa, ANU Medical School

The National Immunisation Program (NIP) is a Commonwealth and state and territory government initiative registered in 1997 that aims to increase national immunisation coverage of some vaccine-preventable diseases (VPD) (Australian Government Department of Health [DoH], 2019). The National Centre for Immunisation Research and Surveillance evaluates the introduction of certain vaccines into the program by assessing 6 main components. The NIP schedule as of July 2021 provides vaccines for 17 VPDs. Addition of vaccines or extension of vaccine eligibility are regularly implemented to address health outcomes and burden regarding the VPDs (DoH, 2019). Indigenous Australians are considered to have higher risk of serious harm due to VPDs which lead to higher incidence of hospitalisations, mortality rates and lower survival rates (Australian Institute of Health and Welfare [AIHW], 2019). The program is not compulsory so instead the National Immunisation Strategy work towards improving immunisation coverage in areas with low coverage and facilitate access to immunisation regardless of financial and geographical barriers.

In 2015, the burden rate of vaccine-preventable diseases for Indigenous Australians was 4.1 times higher than non-Indigenous Australians and the proportion is found to be highest in young adults and infants (AIHW, 2019). It is known that increasing immunisation coverage and timeliness of immunisation is essential for prevention of these diseases and reduction in morbidity (Cashman et al., 2016). The Australian government DoH has responded to this proposition by implementing a 95% aspirational target of vaccination coverage on all children aged 1, 2 and 5 years since 2009. The coverage rates for Aboriginal and Torres Strait Islander children have increased significantly for all age groups since implementation though only 5-year-old children has surpassed the target of 95%. However, the rate of VPDs amongst Indigenous Australians between 2005 and 2015 has decreased by 45%; a greater rate in comparison to a decrease by 31% for the rest of Australia (AIHW, 2019). It may be concluded that the increase in early immunisation coverage reduces the rate of VPDs overall. implementation of the program, the vaccines for hepatitis A, hepatitis B, HPV, meningococcal diseases, and rotavirus have been added to or vaccine eligibility extended on the NIP schedule (AIHW, 2019). This resulted in a decrease in burden for all these diseases suggesting the program

can be effective in reducing burden of VPDs (AIHW, 2019). This proposal is reinforced by the fact that in 2018, the higher coverage for the hepatitis B immunisation of children aged 2 for Indigenous Australians than other Australians (97% and 96% respectively) resulted in a greater decrease in notification rate for hepatitis B for Indigenous Australians (National Indigenous Australians Agency [NIAA], 2021). It is however difficult to determine if the high vaccination coverage is the cause for the rapid decrease in notification rate of hepatitis B.

The NIP does not address all the issues of the burdens of VPDs. The rate of burden among Aboriginal and Torres Strait Islander people for several VPDs has increased including for influenza, shingles, whooping cough, and pneumococcal disease. The Australian Immunisation Handbook encourages yearly immunisation against influenza for all Aboriginal and Torres Strait Islander people with the NIP providing free influenza immunisation for Aboriginal and Torres Strait Islander children (6 months – 5 years) and adults (15+) to reduce cost barriers. In 2018, vaccination coverage was higher in all adult age groups and lower in children and adolescents (NCIRS, 2018). This may imply the gap in eligibility in the influenza vaccine (5-14 years) resulted in lower vaccination coverage in adolescents. Other factors that contribute to lower vaccination coverage include viewing the influenza vaccination program as ‘optional’ (NCIRS, 2018; Webster et al. 2019).

Indigenous Australians are three times more likely to be admitted to hospital for influenza and pneumonia, so it might be necessary to implement free influenza vaccinations for Indigenous adolescents aged 5-14 years too (Steering Community for the Review of Government Service Provision, 2016). Apart from the implementation of the program, a focus on interaction between health services and Aboriginal families to provide ongoing vigilant support can maintain improved immunisation coverage (Hendry et al., 2018). Australia introduced the human papillomavirus (HPV) vaccines through a national school-based immunisation program in the aim to decrease HPV-related cancers (Brotherton, 2018; Poirier et al., 2021). Course completion rates were overall lower for Indigenous adolescents with Indigenous women bearing higher burden of cervical cancer as shown by higher incidence, hospitalisation and mortality rates (Brotherton et al., 2015). There is insufficient evidence around the barriers on the delivery of HPV vaccination for Indigenous adolescents in Australia (Whop et al., 2021). However, barriers to HPV vaccination for Indigenous people in Canada, New Zealand and the USA include limited awareness of the HPV vaccination, limited availability of information and distrust of health institutions (Whop et al., 2021). HPV burden rates had the largest disparity between Indigenous and non-Indigenous. This may indicate that implementation of the immunisation program is not sufficient in increasing coverage so instead the practitioner-patient relationship should be a central objective in promoting vaccine acceptance.

High vaccination rates are only a part of the solution in preventing vaccine-preventable diseases. The Aboriginal Immunisation Healthcare Worker (AIHCW) Program, funded by NSW health was established to minimise disparities in immunisation coverage as well as the timeliness of vaccinations between Indigenous and non-Indigenous Australians. Monitoring timeliness of vaccinations is an important key indicator of effective vaccination programs because there are higher risks of complications for many vaccine-preventable diseases if they are contracted earlier in life (Hendry et al., 2018). This might suggest a focus on interaction between health services and Aboriginal families to provide ongoing vigilant support to maintain timely immunisation coverage. Studies by Hendry et al. (2018) on closing the gap in vaccine coverage between Indigenous and non-Indigenous groups in New South Wales found that AIHCW has contributed largely in improving the childhood vaccination coverage and timeliness of Indigenous children in NSW. This further supports the idea that a program exclusively dedicated to target the needs of Indigenous Australians, staffed by Indigenous workers who understand their communities and can engage with them in a culturally appropriate manner may help overcome barriers to timely and full coverage vaccination.

Improved vaccination coverage is a significant progress that reflects the efforts of policy makers, the Advisory Committee on Vaccines, AIHCW program staff and others involved in engaging with Indigenous Australians and their communities. The implementation of the immunisation program is an effective method of providing important vaccines to reduce the burden of vaccine-preventable

diseases. Additionally, the implementation of immunisation programs that are adapted to reflect needs of the Indigenous population proves to be important factors in reducing the gap between Indigenous and non-Indigenous Australians. Subsequently, it should be encouraged that Indigenous Australians are leading in the policy making process, governance and engagement processes to better reflect local needs by acknowledging wider considerations that impact vaccine acceptance and allow growth of community-target initiatives.

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International Journal of Environmental Health Research (IJEHR)

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With special permission of the current Editor-in-Chief Professor Yudan Wei, School of Medicine, Mercer University, USA and the publisher, Taylor and Francis Online, I am republishing abstracts from current articles that I found of interest and I encourage you to reach out to academic colleagues who should be able to allow you access to the full article for academic purposes (under the Open Access rules. Please check permission for each article before considering distributing to ensure the article has no special conditions or restrictions in place).

Chronic obstructive pulmonary disease (COPD) in women due to indoor biomass burning: a meta analysis,

Ritul Kamal, Anup Kumar Srivastava, Chandrasekharan Nair Kesavachandran, Vipin Bihari & Amarnath Singh (2022) International Journal of Environmental Health Research, 32:6, 1403-1417

ABSTRACT

Chronic Obstructive Pulmonary Disease (COPD) is attributable to household air pollution and is known to increase the Disability Adjusted Life Years (DALYs), morbidity and mortality and women are most susceptible groups for the exposure. In order to understand the global risk among women with COPD due to exposure of household air pollutants, an evidence-based systematic review and meta-analysis was conducted. Meta regression analysis was carried out to identify potential sources of heterogeneity. The summary estimates of the included studies showed higher prevalence of COPD due to biomass fuel exposure in women. Clinical diagnosis has shown more risk of COPD prevalence compared to diagnosis based on spirometer test alone. However, the data between included studies for both clinical and spirometry-based studies showed higher heterogeneity. The present meta-data analysis has shown that household air pollutants may be a factor associated with increased risk of COPD in women.

The association between outdoor allergens – pollen, fungal spore season and high asthma admission days in children and adolescents

Mehak Batra, Don Vicendese, Edward Newbigin, Katrina a Lambert, Mimi Tang, Michael J Abramson, Shyamali C Dharmage & Bircan Erbas (2022), International Journal of Environmental Health Research, 32:6, 1393-1402

ABSTRACT

Periods when asthma admissions peaks have serious implications for asthma sufferers and hospitals. We assessed the association between aeroallergen exposure and childhood asthma peak periods during two grass pollen seasons using the Melbourne Air Pollen Children and Adolescent Health (MAPCAH) study conducted in Melbourne, Australia. Two peak periods were identified. Effect modifications by atopy and sex were considered. All pollen 2 days prior was associated with increased odds of these peak periods. Same day fungal spores, but not pollen, were important. Grass at lag 2 was associated with increased odds 1.03 (95%CI 1.01, 1.05) as was the same day Alternaria 1.02 (1.00, 1.04) per spore/m3 for boys. In addition to pollen, fungal spores particularly Alternaria may result in days of high exacerbations during pollen seasons. Further guidance is needed to better prepare families/carers with information about the increased risk of asthma attacks in children prior to pollen seasons.

Bacterial contamination of neglected hospital surfaces and equipment in an Algerian hospital: an important source of potential infection

Somia Saadi, Rachida Allem, Mohammed Sebaihia, Abdelaziz Merouane & Mohammed Bakkali (2022), International Journal of Environmental Health Research, 32:6, 1373-1381

ABSTRACT

Hospital surfaces are heavily contaminated with bacteria, which are a potential source of nosocomial infections. This study was undertaken to identify bacterial communities isolated from neglected hospital surfaces after cleaning routine in a Algerian public hospital. Screening of bacterial contamination in patient bed (PB), reception land-line phones (TF), door handles (DH) and medical equipment (ME) during five months generated 108 inocula. Isolates obtained were identified based on biochemical characteristics and confirmed by analysis of 16S rRNA sequences. Statistical analysis was performed to reveal possible relationship between bacterial diversity and swabbed surfaces. Our findings showed a high prevalence of bacteria in various hospital surfaces, reaching (65.25%), where a highest contaminated surface was the PB (47.22%) and a lowest contaminated was TF (5.55%). Gram negative bacteria were the dominant group (62.03%) mainly represented by Entrobacteriaceae (42.59%), whereas Staphylococcus aureus belonging to Gram positive was the main expanded pathogen with (15.74%).

Tracheitis hospital admissions are associated with Asia dust storm

Chin-Shyan Chen, Yun-Shan Chan & Tsai-Ching Liu (2022), International Journal of Environmental Health Research, 32:6, 1337-1343

ABSTRACT

The risks of tracheitis have been widely studied, but no investigation has yet to assess the impact of air pollutants on tracheitis hospital admissions. This research explores the relationship between Asia dust storm (ADS) and tracheitis hospital admissions, by using a Poisson time-series model on the 2000–2012 National Health Insurance Research Database (NHIRB) from Taiwan and linking air pollutants and temperature data. From a total of 126,013 tracheitis hospital admissions, the average number of daily tracheitis hospital admissions is 26.53 and increases 10% notably one day after ADS. The empirical result shows that ADS does significantly affect tracheitis hospital admissions 3 and 5 days after an event for the overall sample and 2–4 days after it for females. For the age group <45, the number significantly increases 3–4 days after ADS, revealing that ADS has a prolonged effect on tracheitis hospital admissions.

Prevalence of sick building syndrome in hospital staff and its relationship with indoor environmental quality,

İrem Akova, Esma Kiliç, Haldun Sümer & Tuğrul Keklikçi (2022) International Journal of Environmental Health Research, 32:6, 1204-1219

ABSTRACT

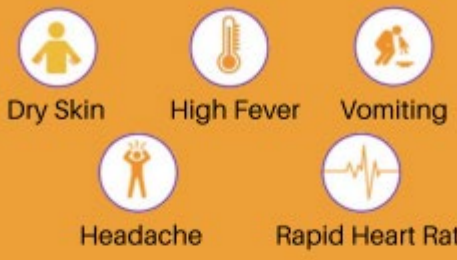
The aim of this study was to determine the prevalence of sick building syndrome (SBS), and its relationship with indoor environmental quality in hospital settings. This cross-sectional study was carried out on 300 hospital staff in Sivas. MM 040 NA Hospital questionnaire was applied. In the hospital indoor environments, air quality (carbon monoxide (CO), carbon dioxide (CO2), oxygen (O2), methane (CH4), hydrogen sulfide (H2S), nitrogen oxides (NOx)), lighting, noise, respirable dust and thermal comfort measurements were made. The prevalence of SBS was determined as 64.7–74.1% in the hospitals. It was found that the risk of SBS was 4.31 times higher for those who complained about variable room temperature and 3.11 times higher for those who complained about noise, and decreased 1.01 times with the increase in lighting level. In order to minimize the risk of SBS, it is thought that all healthcare administrators should be informed about SBS.

Australian National University

These **climate change infographics** were submitted as part fulfillment of health science degree – Professional Practice course at the Australian National University. Student permission has been obtained to publish and distribute royalty free (with suitable acknowledgment for ANU and the students)

DEFINING THE TOPIC

Heat stroke is the final progression of heat stress.[1,2] The two conditions therefore, share many symptoms:



Heat stroke in particular, is characterised by:

- insufficiency of the body's cooling mechanisms
- Abnormal and uncontrolled elevation of body temperature
  - typically above 40.5°C[3]

In the absence of emergency treatment, heat stroke may cause permanent disability or death.[1,3]

Susceptible Populations

- Outdoor workers
- Older people
- People with ill-health
- Children
- People from low socioeconomic backgrounds with poor access to cooling systems[1,3,4]

Did You Know?

It is difficult to classify heat stroke as the primary cause of death due to the associated failure of multiple bodily mechanisms. This may result in heat stroke-related deaths and complications being statistically underrepresented.[3,4]

CLIMATE CHANGE & HEAT STROKE

By Charlotte Collier, Darcy Sharpe, Dillon Hathiramani, Iman Koutsoukou, Nick Pilling & Toby Sebastian

CLIMATE CHANGE AND HEAT STROKE EXACERBATION

- Manifests when the body's mechanisms force the body into a complete shutdown due to excessive heat[5,6]

- Climate change leading to hotter global temperatures, affecting larger metropolitan areas[5,7]

- Increased frequency and intensity of heatwave periods, exacerbating health outcomes related to heat induced stress[6]

- More individuals undergoing heat stress and increased heat stroke rates leading more heat stroke related mortality[6,7]

- Climate change causing heat stress and increasing heat stroke can lead to heat stress-related mortality. This is expected to become a wider public health concern.[5,6,7]

Case Study: Urban Heat Island Effect & Heat Stroke

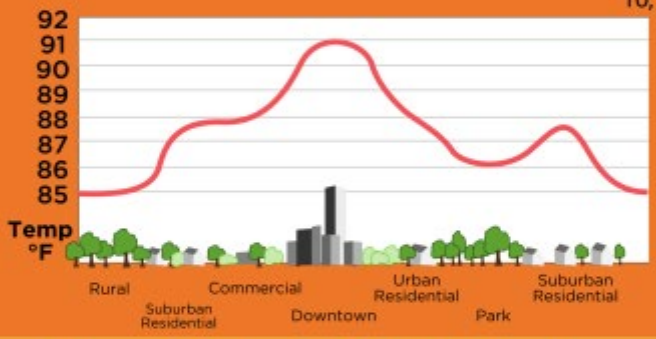
Urban heat islands: when urban areas are include heat retaining objects instead of natural land cover.

Pockets of artificially high temps

Compounds high temps caused by climate change

Humans more susceptible to heat stroke

Bad for older adults, young children, outdoor workers people with poor health and people in built-up areas [10, 11]



Case Study: 2009 Victorian Heatwave

3 consecutive days of >43°C

Ambulance attendances for heat stroke =73

Emergency presentations for heat stroke = 203

Chance of dying from non-exercise-induced heat stroke = 65% [8, 9]

REMEDIATION EFFORTS

In the short term, it is difficult to remediate increased temperature extremes and prolonged heat waves to climate change, however it is possible to alter our behaviours in work and life such that this change does not induce excessive heat stress and heat stroke. As heat stroke is borne of two things: the severity of the heat, and the individual's inability to respond to the heat stress, any interventions to reduce the impacts of climate change induced heat stress and stroke should ideally target these two vectors.[13]

- 1 billion workers are exposed to heat stress [14]

-Heat stroke is commonly experienced by agricultural, construction and industry workers [12-15]

Short Term Efforts

For those exposed to excess heat, minimising exposure is important as this will prevent unnecessary heat accrual. This can be accomplished through simple behavioural modification and environmental adaptations [14-16].

- Ensuring strict adherence to maximum workload quotas per unit of time
- Adequate break duration
- Provision of hydrating liquids [16]
- Building sun protective structures and increasing aeration within a facility will assist in heat dissipation
- Reduce urban heat island effect through integrating heat reducing infrastructure or trees and other vegetation. [17,18]

Significant challenges present in employing these remediation efforts. This is a result of the fact that those who are exposed to such conditions are reside in LMICs which do not have the infrastructure or working conditions to permit such a change in behaviour, without resource, time and financial investments that are not incentivised.

Long Term Efforts

An alternative strategy is to ensure people are healthy enough to endure temperature extremes.

This could be a longer-term remediation strategy involving adaptation to climate change. By reducing human vulnerability, methods can be found to benefit from climatic changes such as longer growing seasons and increased yield. Some of these strategies are as follows:[19]

- Reduce emissions to allow time for adaptation [19]

- Decrease reliance on fossil fuel market

- Improve people's cardiopulmonary health [13,19]

- Develop efficient protocol to keep workforces sufficiently hydrated

- Reduce the social determinants of health that are known to cause diseases that increase peoples susceptibility to heat stress and heat stroke. [13]

ESSENTIAL SKILLS FOR FUTURE HEALTH PROFESSIONALS

Intersectoral coordination and the development of **multidisciplinary teams** is neccessary to manage an increased incidence of heatwave related illness.

How will intersectoral collaboration be achieved?

- Publishing cross-disciplinary research papers that combine climate change and heat stroke research
- Change medical school curriculums to address health issues that result from climate change, e.g., heat stroke
- Implement educational short-courses for health professionals on up to date information on how climate change is changing patient management strategies

Which professionals will be sought after?

Psychologists, engineers, science communicators, epidemiologists and statisticians.[20]

What skills will health professionals need?

- Understanding the connection between climate and health[21]
- Effective science communication and advocacy for patients
- Strive to be active role models of environmental stewardship[22]

Implementing these skills:

Given the fullness of current nursing and medical school programs, concepts of Indigenous health, refugee health and climate change must be interwoven and related to current curiccula, so that a smooth transition of **medical upskilling** can be achieved.[23]

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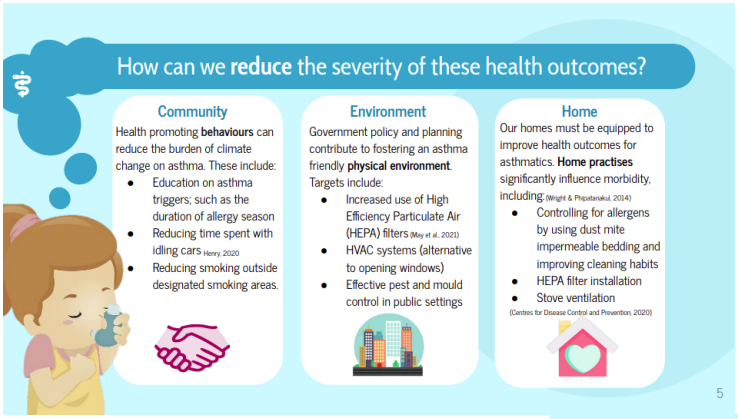

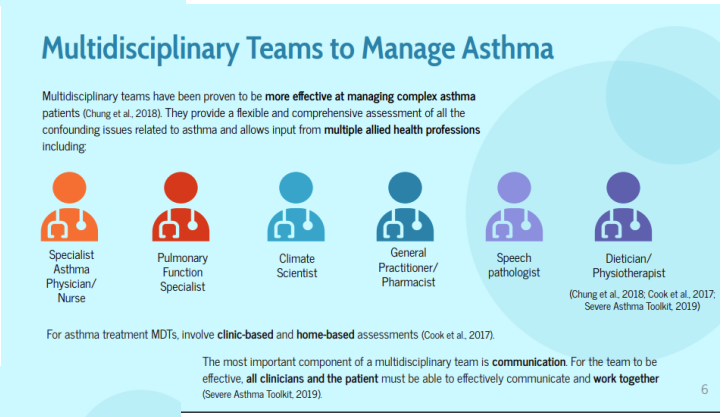

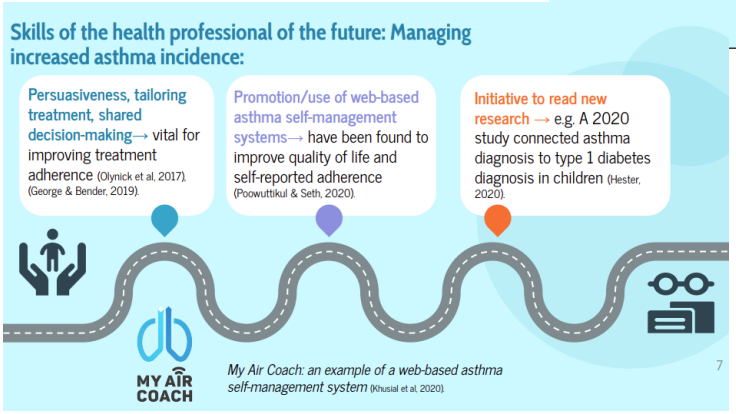

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MAKERERE UNIVERSITY
COLLEGE OF HEALTH SCIENCES
SCHOOL OF PUBLIC HEALTH

By Lydia Nabawanuka Namakula and David Musoke

Makerere University School of Public Health

Kampala, Uganda

Disposal of facemasks: a major environmental health concern during the COVID-19 pandemic

Facemasks were in the past introduced as a mouth and nose covering to protect against droplet infections and lower indoor air contamination in hospital settings. Regardless of their proposed role in surgeries, acceptance of use of these mouth-nose coverings varied in different countries and among generations of physicians due to the discomfort that came along with wearing them (Matuschek et al. 2020). Fortunately, the 21st century has embraced facemask use by health personnel in surgical wards and among tuberculosis (TB) patients to reduce risk of exposure to TB bacteria (Sri Ratnamani and Rao 2013).

Wearing facemasks is one of the interventions that the World Health Organisation (WHO) approved to prevent further spread of SARS-CoV-2 in the public. The COVID-19 era came with extension of medical facemasks and other reusable facemasks to the general population. Medical facemasks are structured as of three nonwoven layers of propylene, the centre of which is melt blown for appropriate filtering (Morone et al. 2022) and are designed for single use. In addition, reusable facemasks became popular during the COVID-19 pandemic. These reusable masks are made of cotton cloth that covers the nose and mouth, with elastic bands that hold the mask firmly by the ears.

However, single-use facemasks have been poorly disposed of in the public which might raise environmental concerns. They should be disposed of as infectious and hazardous medical waste like in health care settings (Shiferie 2021; Scalvenzi, Villani, and Ruggiero 2021) since they might contain droplets infected with SARS-CoV-2. People reuse medical facemasks due to their high cost, and others use them for a prolonged period before discarding them. Therefore, disposing of such abused medical facemasks along the streets is a threat to the health of street vendors and the general population who might get in contact with them (Shiferie 2021). Proper disposal of medical facemasks should be of environmental concern because they are made of plastic materials or their derivatives such as polypropylene and/or polyethylene, polystyrene among other micro plastics that pollute the aquatic environment (Selvaranjan et al. 2021). Improper disposal of such masks could add to the minimum of 5.25 trillion plastic particles in the world's oceans. These micro plastics induce inflammatory response in the intestines of aquatic animals (Montero et al. 2022) and are easily ingested, leading to bioaccumulation in the food chain. Such micro plastic ingestion could be direct or indirect across the food web could end up in aquatic species intended for human consumption and the resultant health effects are dependent on exposure concentrations (Smith et al. 2018). This could further result into chronic effects in human health such as oxidative stress, neurotoxicity, immune system disruption and cytotoxicity (Aragaw 2020; Bhuyan 2022). Used and poorly disposed of facemasks also add to the small debris in the terrestrial environments, blocking drainages and land degradation.

Recommendations have been made to reduce such pandemic-generated waste. Waste facemasks could be recycled to produce construction materials (Selvaranjan et al. 2021). For example, shredding used facemasks and mixing them with recycled concrete aggregate for road base applications and improving the strength and stiffness requirements for pavements base or sub base could be considered (Saberian et al. 2021). For sustainability, producing of facemasks from natural fiber should also be considered.

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Precautionary Allergy Labelling in the United Kingdom: A review of current use and effectiveness and a forward look at the future of precautionary allergen labelling and Natasha's Law.

Amy Naylor-Frizzell (Abstract submitted as part fulfillment for MSc)

The aim of the study was to identify, through a systematic review of relevant literature, whether the current Precautionary Allergy Labelling (PAL) system is sufficient to allow Food Allergic Individuals to make safe, informed, food choices with confidence and identify opportunities to strengthen the system in the United Kingdom. Furthermore, with the introduction of Natasha's Law coming into force in October 2021, the study considered how this may impact on the use of PAL and how it may be regulated for in the future.

A literature review was conducted looking at 4 parts to the study: an overview of how PAL is currently used by consumers and food businesses; Consumer confidence in PAL, Quantitative Risk Assessment (QRA) in PAL determination and the impact of Natasha's law on the use of PAL.

The study found that there was significant variance in how PAL was applied by businesses and how it was interpreted by the consumer. This variance had led to mistrust, lack of confidence and in some cases a disregard for PAL by the consumer restricting food choices and increasing risk taking behaviours. The use of PAL in its current form puts consumers at greater risk of harm from unintentional allergens and standardisation in layout and application of PAL would improve the effectiveness of PAL. Quantitative risk assessment provides future opportunities to increase accuracy and confidence in PAL and will ultimately increase consumer and business confidence in its use. Natasha's Law will align allergen labelling across pre-packed and pre-packed for direct sale products, but it will also put smaller businesses in the difficult position of interpreting and implementing PAL guidance. Future improvements to legislation around PAL risk assessments and labelling requirements will have to carefully consider whether for pre-packed direct sale products the approaches are feasible.

Food safety practices of cooked food Vendors in Masvingo City, Zimbabwe

Stephen Musarapasi[1,2,*], Suzanne Hazel Madamombe[1,3], Simbarashe Mupesa[1,4] and Patrick Mirirayi[1]
[1.] Zimbabwe Environmental Health Practitioners Association
[2]. Ministry of Health and Child Care, Department of Environmental Health Services
[3]. Department of Environmental Health, Masvingo City, Zimbabwe
[4]. Environmental Health Practitioners Council of Zimbabwe

Corresponding Author: stephenmusarapasi@gmail.com Phone: +263715876945

Background: Zimbabwe like many countries in the world is slowly easing Covid-19 restrictions due to a reduced Covid-19 prevalence. As normal urban lifestyles are being revived, the demand for cooked food is also increasing. Most established, registered and licensed Food outlets are taking longer to fully recover, leaving the unregistered food vendors as the quickest ready-to-eat cooked food providers. This study was conducted in Masvingo City Zimbabwe's 5th largest City which is synonymous with transit population migrating to and from South Africa. Street Vendors sell all kinds of cooked meals from the staple cuisines, vegetables, meat, corn, and baked foods. Street cooked food vending raises public health concerns particularly due to the likely breach of food safety and hygiene standards. This study investigated the food safety practices of cooked food Vendors in Masvingo City, Zimbabwe.

Methods: A cross-sectional study design was used to collect data from 120 respondents using questionnaires, the other data collection tools included key informant interview guides and observation checklists. Data was collected from Masvingo City Centre, Masvingo-Mucheke Bus Terminus and Exor Garage Long Distance Bus Terminus

Results: The majority of the Cooked Food street vendors were females (78.5%) aged between 21 and 59 years, those married were (52.7%), had attained Primary Level Education (13.9%), secondary level education (89.6%), University Education (45,4%), The Vendors were largely (92.5%) not trained on food safety and hygiene, did not have Food Handler's Medical Fitness Certificates (92.7%), did not wear food handler's uniforms and head gear (68.9%) and majority (91.4) had no evidence of handwashing on food serving sites.

Almost half (54.2%) of the vendors prepared their foods at home and transported to town using public means (62.6%). The majority (86.8%) of Cooked Foods vending sites were makeshift stations and (40.4%) of them had reportedly been infested with rodents.

Conclusion: Based on this study, the cooked food vendors did not comply with most of the Zimbabwean food safety standards regulations and lacked basic food hygiene. Masvingo City Authorities and the Ministry of Health should therefore design and implement interventions that promote food safety in Masvingo City to prevent food borne Disease outbreaks.

Key words: Handling practices, street vendors, cooked food

New courses launched

WHO announce the following COVID-19 courses:

- **Key considerations for SARS-CoV-2 antigen RDT implementation**: This course covers the main elements that must be considered before, during and after the implementation of antigen-detecting rapid

diagnostic tests (Ag-RDTs) in order to ensure effective implementation and greater public health benefits.

- **Engaging the private sector to deliver COVID-19 tools and achieve Health for All**: This training focuses on the urgent need to engage the private health sector to ensure the efficient and equitable delivery of diagnostics, therapeutics and vaccines needed at the country level to effectively tackle the COVID-19 pandemic.

New courses on other health topics

- **SocialNet: Empowering communities before, during, and after an infectious disease outbreak**: The aim of this course is to provide an overview of operational concepts in relation to community engagement, risk communication, and the application of social science interventions.
- **Inequality monitoring in immunization**: This course examines the five general steps of inequality monitoring in the context of immunization programmes. The target audience is primarily monitoring and evaluation officers for immunization and people who have basic knowledge and experience working with immunization data.
- **Catheter-associated urinary tract infections**: In this course, you will learn about catheter-associated urinary tract infections, incidence, causes, risks, and proper indications for using a urinary catheter.
- **Tropical dermatology**: This course provides an overview of skin diseases seen in the tropics with emphasis on diagnoses that are common or of medical/public health importance.
- **Leprosy: training of health workers on skin-NTDs**: The course addresses the epidemiology of leprosy, suspect, and referral, diagnosis and treatment, lepra reactions, prevention of disabilities and public health interventions.
- **Visceral leishmaniasis in East Africa**: This course aims at providing health workers with the necessary knowledge to understand the epidemiology, diagnosis, treatment, surveillance and outbreak investigation of this important disease in East Africa.
- **Supply chain management of NTD health products for NTD programmes**: The course explains the end-to-end process from planning and submitting donated drug requests through to waste management of expired and unserviceable stock and reverse logistics of unused tablets.
- **Training of health workers at national and sub-national levels on Post-Kala-Azar Dermal Leishmaniasis (PKDL)**: This course aims at providing health workers with the necessary knowledge to understand the epidemiology, clinical presentation, diagnosis, treatment, and surveillance of this important disease.
- **Yaws: Training of health workers at national and districts levels on skin-NTDs**: This online training aims at providing health workers with the basic knowledge to understand the epidemiology, diagnosis, treatment, impact, eradication strategy and reporting of yaws.

Updates to course content

The following course materials have been revised to reflect updates to the technical content and are now up to date:

- IPC for COVID-19 in English. All other languages are currently being updated.

OpenWHO now has 42 courses on COVID-19 and 84 courses on other key health topics, spread across 62 languages. All courses for COVID-19 can be accessed here. You can use the toolbar to filter courses by language. You can also access our catalogues which show all courses and languages available for COVID-19 and other health topics here.

Neglected tropical diseases: WHO launches survey to expand its offer of online training courses

To further expand its offer of online courses, WHO's Department of Control of Neglected Tropical Diseases is launching a virtual survey to assess current gaps, needs and preferences in the offer of virtual tools for capacity strengthening. The survey includes 23 questions and is available in the UN languages and Portuguese. To access the survey, please click on your preferable language: Arabic, Chinese, English, French, Portuguese, and Spanish.

Currently, the OpenWHO platform hosts a channel dedicated to neglected tropical diseases (NTDs) with multilingual courses available, with several additional courses coming soon, tackling disease-specific or cross-cutting subjects.

Ready4Response Tiers 1 and 2 courses are now CPD Accredited!

OpenWHO is committed to delivering high-quality training, supporting your professional development and ensuring credibility and high industry standards. The Ready for Response Tier 1 and Tier 2 courses have been formally accredited for Continuing Professional Development (CPD).

Ready4Response is a multi-tiered core curriculum that aims to develop consistent learning standards across the emergency response workforces at national level. It equips participants with essential competencies needed to work within public health emergency response.

Monthly newsletter

You can access the most recent newsletter here. The newsletter highlights are also available in Chinese, French, Portuguese, Russian and Spanish.

Web: https://openwho.org
Mail: outbreak.training@who.int

Download the OpenWHO mobile apps for iOS and Android

Noise complaints increased by over 50% during first lockdown year in England

Chartered Institute of Environmental Health

01 March 2022, Heidi Douglas-Osborn

CIEH has published the results of its flagship noise survey, which saw a significant increase in noise-related complaints. This year's report found that noise complaints increased by 54% in England between 2019/20 and 2020/21, as people adjusted to life during the first Covid-19 lockdown.

Noise is the single biggest cause for complaints made to local authorities in the UK, and according to the World Health Organisation (WHO), noise is a disease burden that is second in magnitude only to that from air pollution. In 2020, COVID-19 changed the habits of many with the implementation of working from home, home schooling and furlough. The report covered three lockdowns against a backdrop of different restrictions.

The report found that environmental health professionals, working in local authorities to investigate the complaints and take formal action were under extreme pressure. As well as being involved in enforcing COVID-related restrictions, the workload per officer doubled due to the increased noise complaints last year. The average environmental health officer in England investigated 633 complaints per year in 2020/21, compared to an average officer dealing with 299 complaints in 2019/20.

However, the report discovered significant variation between different regions of England. Greater London had the highest rate of noise complaints, 508 complaints for every 10,000 people - over three times the national average - whilst the South West received the lowest rate of noise complaints, 32 per 10,000 people. Workloads also varied greatly, with environmental health officers in Greater London dealing with an average of 1,715 complaints per officer whilst those in the East of England received the lowest average of 190 complaints per officer.
Other key findings from the report include:

- A total of 356,367 noise complaints were recorded by 144 local authorities; on average 149 complaints for every 10,000 people
- 11,211 formal actions were taken by responding local authorities
- The Anti-social Behaviour, Crime and Policing Act 2014 was the most commonly used legislation to take formal action by local authorities
- There were 88 noise-related prosecutions

Unsurprisingly, residential noise accounted for the largest proportion of complaints; this was the case across all regions of England. The number of complaints received by the commercial or leisure sector and construction sector was similar (12,788 and 14,052), with the industrial sector receiving the lowest amount (4,808). Other sources of noise complaints recorded by local authorities included noise in the street, vehicles, machinery and equipment, dogs, agriculture, alarms, military, traffic and railways.

The CIEH England 2020/21 Noise Survey is supported by Cirrus Research and the Noise Abatement Society and data from the survey is being monitored by the Department for Environment, Food and Rural Affairs (DEFRA). Noise data for Wales has also been collected by CIEH and will be released in Spring 2022, whilst the noise data from Northern Ireland is collected by Department of Agriculture, Environment and Rural Affairs (DAERA), which published 2018/19 data at the end of last year.

Julie Barratt, CIEH President, said:

"Environmental health professionals (EHP) have worked tirelessly throughout the pandemic and this survey demonstrates the significant pressure they were under, with average workloads almost doubling due to increased noise complaints.

Noise is not only a source of annoyance, but also has a profound impact on people's health, wellbeing and quality of life. It has been linked to increasing the risk of cardiovascular disease and potentially other cardiometabolic diseases, including strokes and diabetes.

EHPs are at the forefront of receiving and resolving noise complaints and deserve recognition for the important contributions they have made to supporting and protecting the nation's public health.

This survey covered a period of three national lockdowns and a range of government measures and highlights the effect of COVID-19 on noise complaints, and with it, on public health."

Richard Cutting, Cirrus Research UK Sales Manager said:

"The rise in complaints has not come as a surprise to our local authority clients. With changing lifestyle habits resulting from Covid, particularly the increase in home working, they have certainly had their work cut out for them.

Thanks to a long-standing relationship with local councils across the UK, Cirrus Research has been able to support them in numerous ways. By providing our trusted nuisance noise recorder, the Trojan, online training and other resources, and developing a free-of-charge web app for their residents to help triage complaints, we are doing everything we can to lessen the burden faced by environmental health practitioners. In doing so, we're helping them to keep the peace in their communities with far less effort."

Gloria Elliott OBE, chief executive, Noise Abatement Society said:

"Noise is a major nuisance and pollutant that seriously affects people's health and wellbeing.

The CIEH Noise Survey provides valuable evidence that noise profoundly and adversely impacts our quality of life, productivity and peaceful enjoyment of our homes. In the discussion about how we truly build back better, noise mustn't be forgotten.

We want to see good acoustic design applied holistically in all development for the benefit of all."

SUSTAINABLE DEVELOPMENT GOALS VILLAGE DEMO LUNCHEON IN PRETORIA, SOUTH AFRICA

The South African Institute of Environmental Health (SAIEH), in collaboration with the science and technology office at the Swiss Embassy and Mphaphuli Development Trust had an SDG Village Demo Luncheon on 22 March 2022 aiming to initiate community projects in Limpopo province, Vhembe District.

The SDG Village project is an initiative of the Science Office at the Swiss Embassy in Pretoria and the South African Insitute of Environmental Health, jointly implemented with Tombolo Energy, Ekasi Energy and the Mphaphuli Development Trust.

The demonstration luncheon showcased the innovations to the diplomatic and science network of the Swiss Embassy, to the contacts of the project partners as well as advance a discussion about applied research and innovation in rural areas for the sustainable development goals. In collaboration with the traditional leaders of the Thulamela District Municipality and officials from the Vhembe District Municipality, a rural village called Mukoma-a-si-na-nndu was identified as an area where one of the main projects will be established. The first challenge identified was conversion of the school kitchen from a make-shift structure to a fully fletched building. The Science and Technology Office (STO) at the Swiss Embassy plays an active roll in the deployment of Swiss innovations through an instrument of applied research and innovation as part of the Swiss Residency Programme in South Africa.

This pilot will test several innovations in 5 households in the village more specifically to:

- the use of the Ennos Solar Water pump to provide water to the community
- the use of the Katadyn Water filter to ensure potable water
- the application of gasifier cooking stoves using biomass pellets for clean energy
- the use of a solar panel and Li Ion storage battery to enable the use of appliances and equipment
- the utilization of data connectivity via wireless internet

The project will also test the household's acceptance of the technology by testing:

- The readiness of the community for the uptake of the innovations
- The readiness of the community to divert their financial means to sustainable products and innovations
- The willingness of the woman in the households to upgrade their cooking areas for improved health and hygiene
- The impact on environmental health related diseases e.g., water, energy and health and hygiene.

The project intends to demonstrate through research the adoption of applied technology and innovation as a cleaner, safer, healthier and affordable model. The entire 'ecosystem' is designed to be self-sustaining by displacing energy and income spent on wasteful and inefficient living with one that creates income and improves lives.

Each of the five households will receive the following:

- A solar panel and Li Ion Battery
- A water storage container with a Katadyn filter
- Basic kitchen equipment that will be made by the community
- A biomass cooking stove with a fan to improve combustion efficiency
- A retained heat cooker bag to reduce energy use for longer cooking tasks
- An accessory kit comprising Four LED lights, a torch and a radio

- A smart communications device to provide connectivity
- TV Connectivity from a connected platform comprising a WIFI router/GSM connection, an Android TV processor, and connectors
- From left: Mike Mukwevho (Vhembe District Municipality); Gole Mphaphuli (Mphaphuli

Development Trust); Ms Veronqiue Haller (Swiss Embassy); David Nemakonde (SAIEH, Project Manager); Jackson Mphafudi (Mphaphuli Development Trust); Simon Madi (Thulamela Local Municipality) Desmond Musetsho (Mphaphuli Development Trust); Jacquelene Friedenthal (Swiss Embassy) and Koena Motloi

“Please sir, can I have some more?”

A Quantitative study into the Impact of the COVID-19 Pandemic on People with Specific Dietary Requirements

Debbie Hankin and Graeme Mitchell, Liverpool John Moores University

The first cases of a new SARS virus SARS-cov-2 were identified in the Chinese city of Wuhan at the end of 2019 and its subsequent spread across the globe lead the World Health organisation to declare a pandemic on the 11th March 2020. In order to help control the spread of the virus, the UK government introduced its first national lockdown on the 23rd March 2020. The aim of the lockdown was to reduce the transmission of the virus, thus reducing the number of cases, which would in turn reduce the pressure on the National Health Service (NHS) by having fewer people hospitalised and limiting the number of fatalities due to COVID-19. This lockdown closed all non-essential businesses and only allowed citizens to leave their home for essential purposes, such as food shopping and an hour of exercise every day.

Whilst undoubtedly this lockdown was successful in reducing the number of COVID-19 cases in the country, it did in itself give rise to a number of significant Public Health issues: mental health services saw an increase in service users as a result of increased social isolation, depression and people worrying about food insecurity and food poverty. In particular, issues arising from food insecurities and food poverty were exasperated due to school closures and home schooling which initially meant there was no access to the free school meal system [1] However, within this there were significant hidden risks for those with specific dietary requirements, especially in the early stages of COVID-19 pandemic.

This research aimed to explore the impacts on COVID-19 on people with specific dietary requirements (SDR). For the purpose of the research, the term SDR relates to people who identify as having food allergies, food intolerances and food preferences (specifically vegetarian or vegan).

These groups represent a significant proportion of the UK population. The number of people in the UK suffering with food allergies has increased with an estimated 2 million now having been diagnosed with a food allergy. This represents about 1-2% of all adults and 5-8% of children. As a result, hospital admissions for food allergies have increased by 700% since 1990 [2] In respect of food intolerances, the Wycombe Health Authority undertook a population study and discovered that just over 20% of their nationwide sample had a food intolerance [3] For food preferences, increasingly year upon year more of the UK population are following a meat free diet, with the vegetarian diet accounting for 6% and the vegan diet 3%. Indeed by the end of 2021, people aiming to have a meat free diet combined with those already practising could be 13 million, (26%), of the British population.[4] For people with a SDR, the importance of ensuring they are able to access appropriate and safe food which ensures both their physical and mental health cannot be underestimated.

In the weeks prior to and during the first national lockdown, the British media reported food shortages across the food chain, as a result of consumers stockpiling – especially toiletries and long- life food such as rice, pasta and tinned foods. [5]. Consumer confidence in the UK food supply and distribution chain was further eroded, due to media reports highlighting issues in countries that had been affected by the impact of the pandemic earlier than the UK. The Food Standards Agency established that concerns around food insecurity more than doubled during lockdown. [6]

This combination of panic buying and pressures on the food supply chain lead to concerns this would impact more significantly on people with SDRs, who already faced a more limited choice of food to purchase. The lack of basic staple foods within the supermarkets caused people to buy alternatives from the sections dedicated to SDRs leaving no alternatives for those who could not substitute.

Data for the research was collected using a quantitative questionnaire, specially designed for the research. This questionnaire was posted on a number of social media sites which focused on people with SDRs and was available from December 2020 until January 2021. Potential participants then had the opportunity to self-select to engage in the research and whilst this sampling methodology may not capture all of the relevant population, it does allow for relevant data to be collected. As this research was undertaken as part of the BSc (Hons) Environmental Health degree programme, prior to collection of any data, ethical approval was obtained from Liverpool John Moores University. In all a total of 72 participants were recruited for the research study.

The results established that 90% of all participants (n=64) felt that prior to the pandemic they found it easy to purchase appropriate foods. However, during the pandemic only 39% (n=28) of all respondents still thought it was easy to by appropriate foods. This impact was felt most by those identifying as vegan/vegetarian (93% pre-pandemic compared to 47% during the pandemic) and least by those identifying as having a food allergy (100% pre-pandemic compared to 80% during the pandemic). Yet despite feeling that appropriate food was available, participants who identified as having a food allergy where far more willing to make compromises in relation to their food (60%) compared to participants identifying as having a food intolerance (57%) and participants identifying as vegan/vegetarian (46%). This is also reflected in the fact that participants who identified as having a food allergy where far more worried about being able to access appropriate food (60%) compared to participants identifying as having a food intolerance (49%) and participants identifying as vegan/vegetarian (33%).

As panic buying increased in the UK, the range of foods available decreased and so it not unexpected that shoppers would turn to products they would not normally buy, as there was or no alternative available. This meant that the smaller range of products normally available to people with SDRs was now being purchased by the general population. Given this, it is expected that the research should indicate a fall in the ease in which appropriate SDR food could be purchased. It is not perhaps surprising that participants who identified as having a food allergy were most worried, as the potential health impacts for these participants could be significantly worse than for the other participants. So, it is therefore surprising that they appear to be the most willing to have compromised over their food choices, as the potential risks to their health appear to be the greatest. Whereas participants who identified as vegan/vegetarian seemed the least willing to compromise, even though their food preference may be determined by more ethical or moral issues as opposed to health issues.

The outcome of this panic buying therefore placed a section of the UK population at significant risk because they feel they were then forced to compromise their own safety. In response to the perceived severity of this problem, several organisations representing SDRs contacted key industry stakeholders and supermarkets explaining the impact and asking for interventions to be put into place. As a result of this, signage was provided in some stores asking for co-operation from other shoppers not to buy SDR foods unless they would normally do so [7]. Yet the problem seemed to persist until the wave of panic buying had subsided and normal shopping behaviours had resumed. Although the UK has subsequently entered two further periods of lockdown, episodes of panic buying have not been as prevalent, as consumers have regained confidence in the supply chain mechanisms. However, disruptions to local, national and international supply chains may occur in the future (which may or may not be related to COVID-19) and so thought must be given to protect those with SDRs.

Key words
COVID-19, lockdown, food security, food allergies, food intolerances, food preferences

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SOUTH AFRICAN INSTITUTE OF ENVIRONMENTAL HEALTH SOLAR WATER PUMP PROJECT

Given the Environmental Health challenges in the Eastern Cape, the South African Institute of Environmental Health has recommended that the project location will be in the Qumanco Village, in the Engcobo Local Municipality of the Chris Hani District Municipality, Eastern Cape Province.
The enabling Swiss innovations of ENNOS and KATADYN provide a combined solar-powered pump and water filtration system that can deliver up to 1500 litres per hour, serving an entire community with portable water. The KATADYN innovation is a ceramic water filter that removes all pathogens and turbidity from the water. The water is pumped from surface water stream to a JoJo water tank, where it is run through the water filter and tapped into household storage containers. The household storage container will be constructed in South Africa and equipped with a filter having a 3- year life span. These durable and sustainable innovations have an estimated cost of not more than R100,000.00 per village with a lifespan of over 10 years for the solar pump and 7000,000 liters of clean water for the household water filter.

The innovations have an economic multiplying factor of improved health, agriculture, and household industries. Also, is remote support from ENNOS and KATADYN with access to several online tools concerning installation, maintenance and repairs.
The advantages of the combined solar-powered pump and water filtration system are that it is:

- Ideal for remote and under-resourced settings
- User-friendly
- Immediate removal of any pathogens and turbidity
- One stage filtration – no need for pre-filtration
- Robust in all geographical settings
- Digital performance monitoring and
- Affordable and durable household water storage filter.

Access to clean water provides an excellent opportunity to implement the well-established water, sanitation and hygiene (WASH) programme as an environmental health promotion intervention. The project is not currently providing for improvement of toilets' implementation, but there is the opportunity to implement the successful Community -Led Total Sanitation (CLTS) programme. Assess to portable water provides an enabling environment for Environmental Health Practitioners (EHP's) and Community Health Workers to implement the WASH and CLTS programme.

A water sampling schedule will be developed to test the water filtration through the KATADYN water filtration system. The water sampling and testing will continue by implementing the pilot project. The results will be handed over to the Water Research Commission as part of their combined solar-water and filtration pump system evaluation process. EHPs will be involved in this process.
The SAIEH jointly with the Swiss Embassy has appointed Mr. Siya Vellem as the Project Manager for this project and to oversee the implementation of this project.
Rolf Niemand, the service provider has approved the identified water source that the solar water pump project is viable to be implemented at Fama, Qumanco Village. He further took GPS coordinates between the water source and available water reservoir that will need increase a capacity to store more water in order to supply enough water in the village. He also proposed siren to be installed to the chief homestead since it is not far from the water source for the purpose of security with regard solar pump.

Environmental Health Practitioners together with stakeholders, assessing water source.

Watch this space.

Comhairle Cathrach Bhaile Átha Cliath
Dublin City Council

Claire O'Connor hopes to submit the findings from her thesis on the prevalence and leading cause of mould growth in Dublin' rental housing market. It highlighted some gaps in current enforceable legislation in Ireland, and also raised a discussion about energy prices and how tenants in receipt of Housing Assistance Payments are more likely to be experiencing fuel poverty

International Days of Public and Environmental Health Profession 2022 in Slovenia

Andrej Ovca[1], Sara Tajnikar[2], Aleš Krulec[2]

[1]Univeristy of Ljubljana, Facutly of Health Sciences, Department of Sanitary Engineering, Zdravstvena pot 5, SI-1000 Ljubljana, Slovenia
[2]Institute of Public and Environmental Health, Zaloška cesta 155, SI-1000 Ljubljana, Slovenia

On April 7-8, 2022, the annual meeting of international public and environmental health professionals was held in Slovenia, organized by the Institute of Public and Environmental Health. This year, the annual meeting was held as part of the World Federation of Public Health Associations' initiative, Global Public Health Week, under the theme "Public Health Matters: Building the New Future" The main goal was to recognise the contributions of public health and its workforce. The main theme of the Slovenian event was "Preventing the Next Pandemic." On both days, 120 delegates participated in the event. On the first day, delegates discussed how to strengthen the connection between professional associations and their members in the field of public health. The second day featured an online webinar on the following topics:

- The role of a public and environmental health professionals - sanitary engineers in epidemiologic service during the Covid 19 epidemic in Slovenia.
- The role and functioning of the Health Inspectorate of the Republic of Slovenia during and after the epidemic.
- Introduction of population-based approaches in the field of public health.
- The importance of nudging in the field of hygiene behaviour and its application in practise.
- Hygiene education and training - challenges and new opportunities.
- The need to disinfect rooms in accommodation in light of the covid epidemic.
- Potential of using cold plasma for biofilm control.
- Availability and use of biocidal products for disinfection.
- Changes in the quantity and composition of health care waste during a pandemic.

ENVIRONMENTAL HEALTH & EQUITY COLLABORATIVE

Climate Effects and Environmental Health

Climate change is a health equity issue

Climate change effects in the U.S. disproportionately impact people of color, people with disabilities or health conditions, low-income communities, tribal communities, immigrants, the elderly, children, and people who are not fluent in English among others. These populations face greater challenges in adapting to or recovering from climate change impacts.

- 40% of federally recognized tribes in the U.S. live in Alaska Native communities where the rapid pace of rising temperatures, melting sea ice and glaciers, and thawing permafrost is having a significant negative impact on critical infrastructure and traditional livelihoods.
- People who have disabilities often face barriers in accessibility to health care services and emergency information and have historically high rates of illness, injuries or death from climate change events.
- Those who work outdoors are often the first to be exposed to climate change, specifically through increases in temperature, poor air quality, extreme weather events, diseases transmitted by ticks and mosquitoes, industrial exposures, and change to infrastructure.
- African American and Latinx communities have greater vulnerability to climate impacts, including heat, poor air quality, and extreme weather, due to overall lower income and poorer health status as a result of historical and present day discriminatory practices.

Communities in the United States are already experiencing climate change impacts on their health, well-being, and quality of life. Fortunately, opportunities exist at all levels of government to help communities plan for and adapt to these impacts and safeguard their health.

Air Quality

Climate change contributes to **increased production of pollen and lengthened pollen** seasons, which can worsen allergies and asthma. **Particulate matter in the smoke from wildfires** — which are expected to be more frequent and severe — increases sudden onset respiratory illness, respiratory and cardiovascular hospitalizations, and medical visits for lung illnesses, and the risk of premature death.

In 2016–2018, nearly **one in five (150 million)** Americans were living in areas with unhealthy ozone or particle pollution.

Extreme Heat

Heat stroke is the most serious heat-related disorder, caused by the body overheating. The condition can cause death or permanent disability without timely emergency treatment. Hospitalization due to heat disorders are increasing and experts predict that extreme heat events will occur more frequently, last longer, and be more severe in the future.

More than **600 people** in the U.S. are killed by extreme heat every year.

Extreme Weather

Flooding, hurricanes, tornadoes and droughts are just some of the extreme weather events predicted to occur more frequently or to be more severe as a result of climate change.

2019 was the **fifth consecutive year** in which 10 or more billion-dollar weather and climate disasters impacted the U.S.

Vectors

The development and survival of **ticks, their animal hosts** (e.g., deer), and **the bacterium that causes Lyme disease** are all strongly influenced by climatic factors, especially temperature, precipitation and humidity.

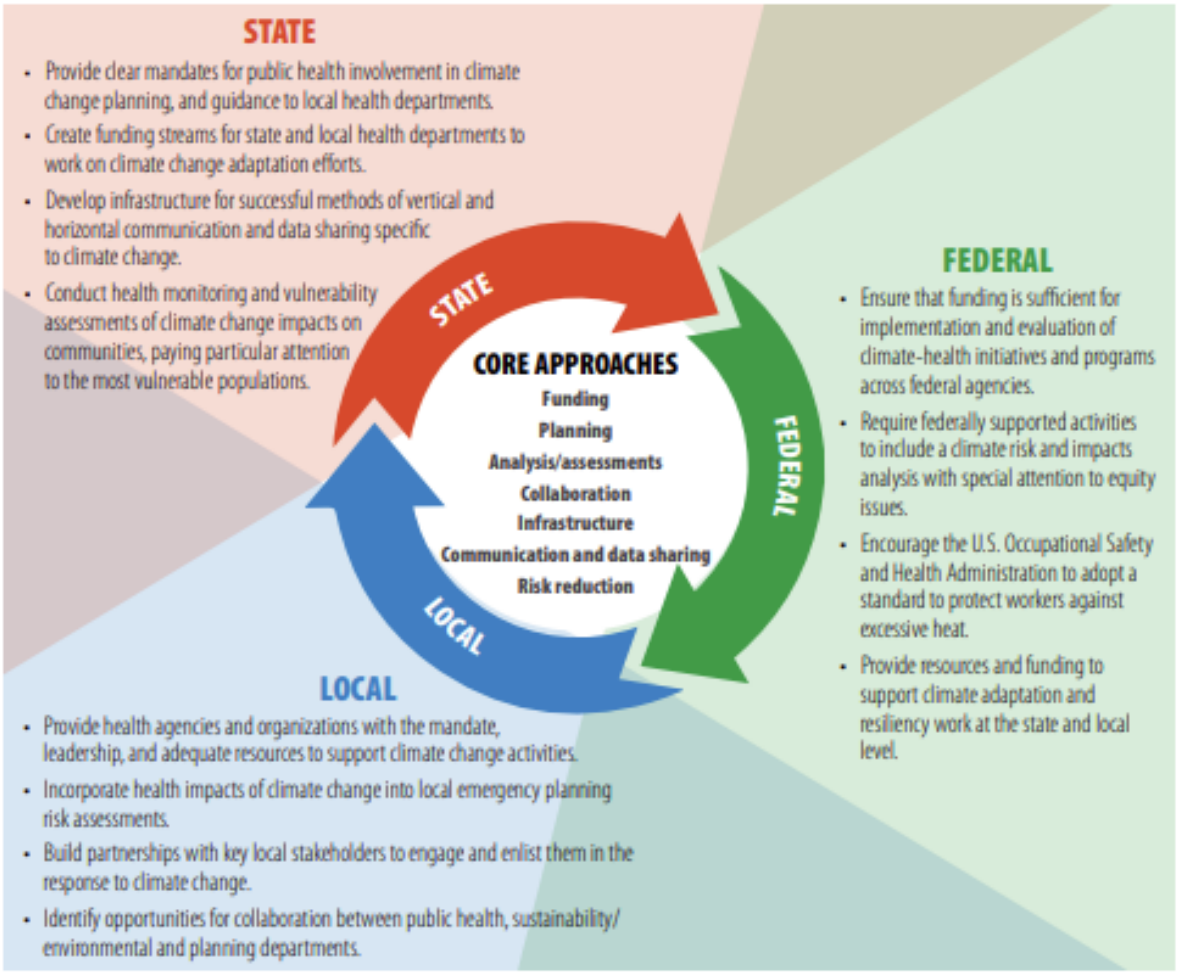
During 2004–2016, **an additional nine vectorborne human diseases** were reported for the first time in the U.S.

Opportunities For Action

Opportunities exist at all levels of government to help communities plan for and adapt to the impacts of climate change.

Many states and localities have begun this planning but will need resources to continue this work and to coordinate with neighboring jurisdictions. Efforts should focus on preparedness and building community resilience in the face of climate events. Dedicated funding and resources will be especially critical to support efforts in communities that are historically disadvantaged and disproportionately affected by climate change. Given this disproportionate impact, operating with an equity lens is necessary for any successful climate program or project.

The following are important strategies and approaches to guide this work across all levels of government.



This project is supported by cooperative agreement U38OT000294 between the Centers for Disease Control and Prevention and the American Public Health Association. The contents of this document are solely the responsibility of the Environmental Health & Equity Collaborative and do not necessarily represent the official views of the CDC or APHA.

https://apha.org/ehec

University adverts

The University of Derby provides over 300 study programmes at undergraduate level. As well as short courses, foundation degrees and postgraduate degrees covering most academic disciplines and sub-disciplines. Currently the univ ersity is home to around 34,000 students in all areas of study. The MSc Environmental Health Programme was opened in 2003 and is accredited by the Chartered Institute of Environmental Health (CIEH). In 2014 the programme was moved to a entirely online basis and is the only accredited environmental health programme offered fully online.

University of Applied Sciences Velika Gorica (UASVG)

UASVG started to operate in 2003 with five professional three-year study programmes: Humanitarian demining, Pyro technology, Computer Systems Maintenance, Motor Vehicle Maintenance and Aircraft Maintenance. It was the first private university of applied sciences from the field of technical sciences in the Republic of Croatia. The founder of the UASVG isthe City of Velika Gorica. The basic function of the studies is to implement the teaching activities of the approved programme and to encourage the development of all scientific- professional teaching disciplines that are represented or ought to be represented on the study,based on the science and the profession, and with the intent to approach the level of standards worldwide.

Study at UASVG

University of Applied Sciences Velika Gorica offers study programmes that are interesting to the young people from Europe, as well as from other parts of the world. From the very beginning the University of Applied Sciences has been developing mentorship approach based on the understanding and better relations between students and professors.

What are the advantages you have as a student at UASVG

High-quality acquisition of knowledge and skills in modern equipped premises, practical classes organised in cooperation with the industry, and a number of other possibilities for successful study are some of the advantages of the University of Applied Sciences Velika Gorica. The UASVG programmes have been adjusted to actual labour market needs.

Undergraduate professional study programme:

Management in Crisis Situations is a study programme intended for decision makers and/or people who provide professional support to decision makers in legal entities and units of local and regional administration, state administration units, and especially the protection andrescue system in the police and the army. Disasters, as specific crisis states, occur when accidents or crises caused by forces of nature (floods, fires, earthquakes) or human activity (environmental impacts, terrorism etc.) affect people to such an extent that the affected population cannot control the course of events and successfully deal with the inflicted blows, losses and damage. The frequency and severity of disasters can be greatly reduced, or the effects mitigated if more attention is paid to the forecasts, observations, planning the provisionof aid and general preparedness for adequate crisis or disaster response in case it occurs.The competences of graduated experts from this study programme include planning and implementation of preventive measures to prevent and mitigate the effects of crises or disasters

in business enterprises or human environment in general, as well as the provision of professional assistance and coordination of professional teams and equipment after a crisis ora disaster.

It is the only such study programme in Croatia and in the entire South-eastern Europe, which qualifies future experts for the needs of the crisis management system and the system of protection and rescue. By graduating, the students acquire knowledge and skills for independent solving of crisis management problems for preventive action, managing theprocess of collecting and processing information, proposing procedures and solutions, and performing the management process.

Professional title upon graduation: professional baccalaureus/baccalaureate engineer of Management in Crisis Situations

Specialist diploma professional study programme:

Crisis management is a study programme intended primarily for persons who are involved in protection and security aspects of crises in the activities of legal persons, industry, local and regional administration bodies, and government administration bodies. Upon graduation the students acquire specialist knowledge and competences for independent solving of problemsin crisis management, managing processes and management systems of security and protection in public and private sector, especially in industry at the national and international level, as well as harmonizing the activities with the system of managing the functional activityof the organisation.

Professional title upon graduation: professional specialist engineer of Crisis management

Contact

University of Applied Sciences Velika GoricaZagreba ka 5

10410 Velika Gorica, CroatiaPhone: 01/62 22 501

e-mail: info@vvg.hr

Web site:http://www.vvg.hr

Facebook https://www.facebook.com/veleucilistevgYoutube video
http://www.vvg.hr/index.php?option=com_content&view=article&id=1275&lang=hr

Google map http://www.vvg.hr/index.php?
option=com_contact&view=contact&id=1&Itemid=543&lang=hr

Lusaka Environmental Health University

LUSAKA ENVIRONMENTAL HEALTH
UNIVERSITY

2022 ENROLLMENT IS OPEN!!!

Lusaka Environmental Health University (LEHU), a specialized research-based International University and the first of its kind in Zambia, Southern Africa offering training in three (03) specialized health fields, now invites its very first applications for the following programmes:

Degree Programmes:

- Bachelor of Science degree in Environmental Health (BSc EH).
- Bachelor of Science degree in Public Health (BSc PH).
- Bachelor of Science degree in Occupational Health and Safety (BSc OHS).

International University Entrance Programme:

- Advanced "A" Level Subjects: Mathematics, Chemistry, Physics, Biology and English.

ENTRY REQUIREMENTS

Non-Professional Direct Entry Requirements

1. Full Grade 12 Certificate with five (5) Credits or better including Mathematics, Science and English or equivalent certified qualification at an equivalent standard.
2. All First Year Students will undertake a one (1) year Pre-Sciences Advanced "A" Level Course in Mathematics, Chemistry, Physics, Biology and English.
3. Copy of valid passport or National ID.

Professional Direct Entry Requirements

1. Diploma in Environmental Health, Public Health, Occupational Health and Safety or any health related sciences from a recognized institution.
2. Copy of valid passport or National ID.

NOTE: Applicants with the said Diplomas enter directly into Third Year of the Bachelor's Degree programme.

STUDY MODES

1. Full Time: Monday – Friday, 8am – 4:30pm.
2. Evening: Monday – Friday, 5:30pm – 8pm.
3. Weekends: Saturday, 9am – 4pm.
4. Weekends: Sunday, 9am – 4pm
5. Blended Learning. Distance, Online plus Residential – Throughout The Year.

CONTACT US

+260 76 6279195/ +260 97 3140515/ +260 95 0348710
+260 76 6279195
enquiries@lehu.edu.zm, admissions@lehu.edu.zm
www.lehu.edu.zm
Lusaka Environmental Health University

Plot No. 34774 Alick Nkhata Road,
Mass Media,
Lusaka, Zambia
P.O. Box 50902 RW, Ridgeway,
Lusaka, Zambia

Quality, Dedication, Trust and Communication.

University of Birmingham

CIEH Accredited

Environmental Health Sciences: Postgraduate Opportunities

At Birmingham we offer a range of Environmental Health Science Masters programmes that are accredited by professional bodies. These include:

- MSc Environmental Health – CIEH accredited
- MSc Public and Environmental Health Sciences – CIEH accredited (designed for international students)
- MSc Health, Safety and Environment Management – IOSH accredited
- MSc Air Pollution Management and Control – Committee of Heads of Environmental Sciences accredited

Birmingham is an internationally recognised Russell Group university and has been awarded Gold in the Teaching Excellence Framework. The University recently invested £5 million in expanding our student employability services. Our specialist Careers Network team can offer you advice and guidance that is specifically designed to meet your needs as a postgraduate student.

Join one of our programmes and develop knowledge and skills which will be the foundation for your future career in Environmental Health Sciences. You will be taught by both outstanding researchers and practitioners in their fields and will have access to our first-class facilities.

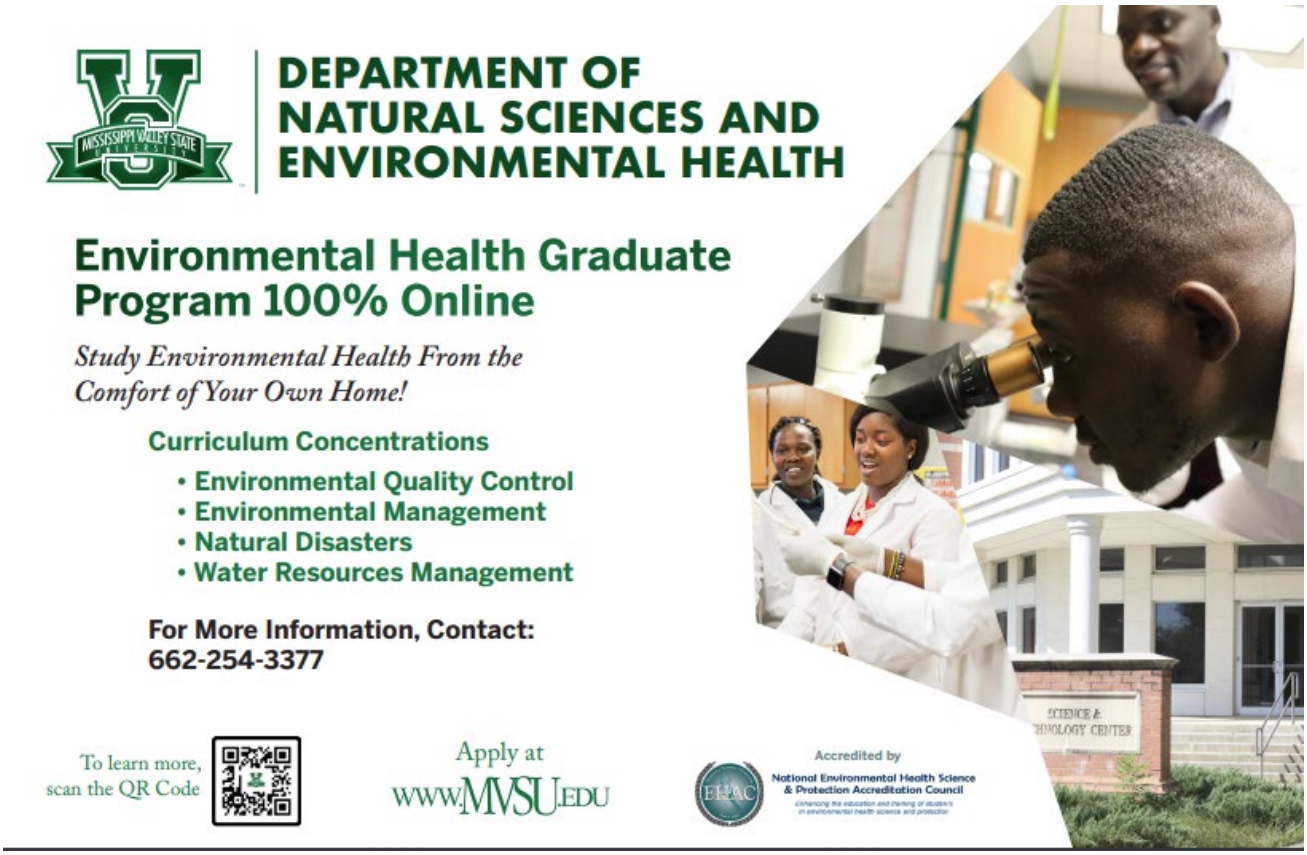
With a focus on research-based teaching, our students are encouraged to share their dissertation findings at conferences and to draft papers for potential publication. You will develop your critical thinking and evaluation skills in preparation for your career as a future leader in your field.

Full and part time routes are available.

To discuss the courses in more detail please contact either Zena Lynch (z.lynch@bham.ac.uk), Surindar Dhesi (s.k.dhesi@bham.ac.uk) or Zongbo Shi (z.shi@bham.ac.uk)

www.birmingham.ac.uk/gee

Mississippi Valley State University



Ulster University

BSc (Hons) Environmental Health (with Diploma in Professional Practice)

Environmental health professionals are at the forefront of designing and improving the public's health and wellbeing.

1. Have you ever wondered what happens behind the scenes of restaurants,shops, businesses and government?
2. Would you like a knowledge of issues such as food safety, health and safety, housing, public health or pollution?
3. Do you want a degree that leads to a career where you are out of the office meetingpeople and dealing with different challenges each day?
4. A degree that has very good employment prospects, locally and internationally,in well paid graduate jobs?
5. Would you like to study on a course that provides this, plus lots more?Then come and study

   Environmental Health at Ulster.

Our graduates are equipped to find employment in a wide range of environmental healthactivities across public, private, and voluntary sector organisations. Environmental Health Practitioners (EHPs) can take their skills into a huge variety of roles. It is a careerwhere you are dealing with different challenges every day.

This BSc (Hons) Environmental Health programme has great strength in delivering the practical and academic skills required for a career in environmental health includingproblem solving, communication, research, and management skills. It also aims to facilitate
the development of your own personal, communication and intellectual abilities.

The course includes the core subjects of food safety management, health and safetyat work, environmental protection, housing and public health. The areas of sustainability, quality of life, health inequalities, law and spatial planning are also integrated throughout the programme.

The BSc Environmental Health course is accredited by both the CIEH and IOSH The course scores consistently high for student satisfaction (93% student satisfaction) with 95% of graduate in work or further study 15 months after graduation. To find out more visit www.ulster.ac.uk or contact Lindsay Shaw, Course Director, at email l.shaw@ulster.ac.uk

MSc – Global Strategy in Environmental Health and Sustainability (Distance Learning)

This new programme has a strong international theme and focuses on the global role of environmental health in protecting communities and delivering a healthy, sustainable future. A perfect choice if you are passionate about the future health and well-being of our planet and its inhabitants.

The ethos of the course reflects **critical action 3** from the 3rd International Federation of Environmental Health (IFEH) Academic World Conference on Environmental Health, April 2019, Kampala, Uganda, specifically aimed at the role of academia in providing advanced education programmes and research to help facilitate the role of Environmental Health as "*a cornerstone to achieving the Sustainable Development Goals*".

Delivered **entirely by distance learning, as part-time or full-time options**, it will enable you to study at a time and pace of your own choosing, engage with, and learn from, a diverse pool of peers.

The core principles of environmental health are embedded throughout the programme, aligned to the CIEH Professional Standards Framework, and directly linked to the attainment of UN Sustainability Goals. It will equip you with the critical thinking and problem-solving skills necessary to make a real impact in this field. Throughout each element we link the cross-cutting themes of, policy, strategy and intervention. You will be equally at home in a strategic or operational role, in a local or global setting.

Through an engaging on-line environment, you will cover topics **including food safety and security, environmental protection, sustainable technologies, emergency planning, resilience, housing and communities, international and human rights law.** Your research module will focus on the production of a journal article.

This MSc will be attractive for personal and professional development reasons. It will be equally attractive as a route to a rewarding career in the broad discipline of environmental health.

Contacts:

Sharon Moore, Admissions
T: +44 (0) 28 90366018
E: s.moore1@ulster.ac.uk

Mr Robert Cameron, Course Director
T: +44 (0) 28 90366054
E; rj.cameron@ulster.ac.uk

Flinders University

Ruaha Catholic University (RUCU).

Ruaha Catholic University (RUCU) is the successor of Ruaha University College (RUCO) which was established by the Tanzania Episcopal Conference (TEC) under its Trust Deed of the Registered Trustees of Ruaha University College through the generous support of well-wishers (friends of RUCU) within and outside the country.

This is one among the university offering Bachelor and diploma of Environmental health with information Technology (BEHSIT). It is found in Tanzania in Iringa region. The university is endowed with practical and much field work to socialise the environmental health aspects such as inspection of premises.

Contact Us Through

Vice Chancellor –
Ruaha Catholic University
Tanzania
P.O.Box 774 - Iringa
Phone: +255 27 02431
Fax: +255 27 02563
Email: rucu@rucu.ac.tz

Website: https://rucu.ac.tz

Cardiff Metropolitan University

Cardiff Metropolitan University has been delivering environmental health and public health qualifications for over 40 years. University employability statistics show that within six months of completing one of our undergraduate programmes 85% of our graduates have entered professionally relevant employment in both private and public sector roles.

We host the following programmes:

BSc (Hons) Environmental Health – with unique triple accreditation by the CIEH, Institution of Occupational Health, Safety and Wellbeing (IOSH) and Institute of Environmental Management and Assessment;

MSc Applied Public Health – developed in line with the Public Health Skills and CareersFramework for new entrants into the profession or those wishing to develop their careers;

MSc Occupational Health, Safety and Wellbeing – accredited by IOSH and available as adistance learning qualification whilst you are working full time;

MPhil/PhD/Professional Doctorate degrees – with three experienced supervisors focusingentirely on these areas.

To find out more visit www.cardiffmet.ac.uk or
contact our enquiries team on (+44) 2920 416044, courses@cardiffmet.ac.uk

University of Michigan

University of Copenhagen

Head of Studies Department of Public Health
Global Health Section
furu@sund.ku.dk www.pubhealth.ku.dk

Peter Furu Associate Professor,

“Experience from recent major disasters, changes in the humanitarian field, thechanging nature of conflict, and climate change impact all have made it clear that a holistic approach to disasters and crisis management is needed to substantially reduce lossesand deal with new challenges the current system seems ill equipped to respond to. A coherent and holistic approach to disaster risk management is not without challenges. Decision have to be based on a politically, economically, socially, culturally, and environmentally sustainable foundation and rooted in sound development policies. Risk reduction needs to underpin and guide decisions in Preparedness, Response and Recovery planning and programmes. Professionals with an adequate knowledge base and the right skills are invaluable if these challenges are to be met.

In response to this demand, the University of Copenhagen is offering a one year master programme, based on the above philosophy – a Master of Disaster Management.

To apply, please visit www.mdma.ku.dk.

You can contact us on e-mail mdma@sund.ku.dk

BECOME A HUMANITARIAN AID PROFESSIONAL

Experience gained from recent major disasters, changes in the humanitarianfield, the changing nature of conflict, and climate change impact have all made it clear that a holistic approach to disasters and crisis management is needed to substantially reduce losses and deal with new challenges to which the current system seems ill- equipped to respond.

The Master of Disaster Management (MDMa) is a research-based, cross-disciplinary postgraduate programme in the field of disaster risk management with the aim of fostering professionals who can formulate effective responses to complex practice and policy issues and thereby substantially reduce disaster losses.

The programme covers the three main processes of disaster risk management – reduction, response and recovery,and emphasizes that disaster risk reduction needs to underpin and guide decisions in preparedness, response and recovery planning.

The holistic approach of the Master of Disaster Management programme provides a solid basis for professionalaid workers. The programme consistsof lectures, team case assignments, field trips and individual assignments that combine practice-based competencies with the latest researchand knowledge of disaster risk management.

The combination of science and hands-on learning allows a comprehensive understanding of disaster risk management processes.This enables a more strategic and tactical approach to be taken to ensure the best possible solutions for obtaining appropriate disaster response, recovery and risk reduction.

LEARNING OUTCOMES

The programme will provide you with a mix of practice- based competencies, in-depth scientific knowledge and effective negotiation skills.

As a graduate of this programme, you will be able to:

- understand the complexities of health, socio-economic, political,physical and environmental vulnerability in disasters
- identify scientific challenges, analyse and assess risk capacitiesand vulnerabilities and design appropriate evidence-based interventions
- communicate effectively withaffected populations and other stakeholders in disastermanagement planning and operations
- develop and maintain interdisciplinary and cross-culturalcollaboration in complex and unpredictable situations.

"I strongly welcome this effortof professionalising – in all meanings of the term – the workof managing and delivering humanitarian aid and disaster relief."

- Poul Nielson, Former European Commissioner of Humanitarian Aid and Development.

FOUNDED IN GLOBAL PROCESSES

The Master of Disaster Management is a research-based postgraduate programme, designed in accordance with the Hyogo Framework for Action (2005–2015), the Sendai Framework (2015–2030) and the Sustainable Development Goals (2016–2030).

PARTICIPANTS

This programme is relevant for those from a wide variety of disciplinary backgrounds – risk managers, engineers, doctors, nurses, military officers, social scientists, logisticians and journalists, to mention but a few. Enrolment requires a Bachelor degree and at least two years of workexperience within the humanitarian field

STUDY FULL-TIME OR PART-TIME

The Master's programme can be completed as 1 year's full-time study or up to 3 years on a flexible study (part-time) arrangement.
You can sign up for the full programme or individual courses.

CONTACT

For further information and enrolment, visit **mdma.ku.dk** or writeto **mdma@sund.ku.dk**

Newsfeeds and information sources open to EH members

(Please email the editor, any sources/links you have found that are not on this list).

Food Safety

www.foodnavigator-usa.com

www.foodonline.com

www.foodsafetynews.com

Development Aid

coleacp.org/

devex.com

Global perspectives

worldhealthupdates@who.int

Journals/ research

marketing@lancet.com

ukehrnet.wordpress.com

International Journal of Environmental Health Research – supported by IFEH

Journal of Environmental Health – published by NEHA

Archives of Environmental & Occupational Health

Environmental Health Perspectives

Environmental Health

International Journal of Hygiene and Environmental Health

Reviews on Environmental Health

Environmental Health Insights

Journal of Environmental and Public Health

Journal of Environmental Health Science and Engineering

National / Regional information

foodauthority.nsw.gov.au/

Academy of Higher Education

communication@advance-he.ac.uk

ENVIRONMENT-DISASTERS list

https://www.jiscmail.ac.uk

Health & Safety (UK)
https://www.hse.gov.uk/index.htm

Public Health England
https://www.gov.uk/government/organisations/public-health-england

Sphere Project
spherestandards.org

RESEARCH FOR HEALTH IN HUMANITARIAN CRISES
https://www.elrha.org/

Disaster Relief information sources
UNDRR

WHO -Preparedness environmental health emergencies

Relief web

The Health in Humanitarian Crises Centre

COVID

https://www.worldometers.info/coronavirus/

COVID-19 Information Dashboard

Good academic/professional links

Key journal databases

CIEH REHIS NEHA EHA NZIEH

Greg Martin via LinkedIn

Disaster Management/Risk Reduction courses around the world

The UWI, Mona has an office of Disaster Risk Reduction.

OpenWHO is WHO's interactive, web-based, knowledge-transfer platform offering on-line courses to improve the response to health emergencies. OpenWHO enables the Organization and its key partners to transfer life-saving knowledge to large numbers of frontline responders. https://openwho.org/

CDC Learning Connection

ADVERT - Highfield online training