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CLIMATE TALK: A series of events leading up to COP26
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Topic/Lecture title:

Health, Mental Health, and Climate Justice

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1. Introductory stuff

- Hi everyone, I'm Dr Harriet Ingle, and I'll be talking today about health, mental health, and climate justice.
- I'm a neuropsychologist by training, and I'll be touching on some neuropsychological perspectives throughout this talk (I can't resist!).
- Climate psychology is an emerging area of psychology: one with almost **no prior research evidence**.
- There are currently fewer than 300 published research papers on the topic, which gives you an idea of how new it is.
- During this podcast I'll be giving an overview of:
 - what good mental health means
 - what we know about the *health* impacts of climate change
 - the mental health impacts of climate change (what little we know about them so far)
 - a VERY brief overview of climate justice
 - and some examples of the intersection of health, mental health, and climate justice.
- Mental health is not an easy topic to discuss at the best of times, and neither is climate change, so this will likely be a tough podcast to listen to at times. However, I hope that I can make it interesting for you all and show you the value of researching this field.

2. What is mental health?

- Being mentally healthy doesn't just mean an absence of a mental health disorder.
- Mental health incorporates our emotional, psychological, and social well-being.
- It affects how we think, feel & act.
- It helps determine how we handle stress, how we relate to others, and impacts the choices we make.

- Many factors contribute to mental health, including; biological factors, life experiences, and family history.
- Experiencing mental ill health is common. Around 1 in 4 people will experience a mental health disorder in the UK in their lifetime. Some mental illnesses are transient, others may last longer and follow a pattern of recurrence.
- But, mental illness, while common, can be debilitating; and can affect an individual's prospects including their employability, their relationships, and even their physical health.
- Mental illness can be categorised in various ways; from mild to serious.
- The Diagnostic and Statistical Manual of Mental Disorders (called the DSM for short) is commonly used to classify and diagnose mental illnesses. There's a European version, too, called the ICD-10.
- There are over 300 different recognised, diagnosable mental illnesses categorised at present.

3. Climate Change & Health

- Far from being a purely environmental issue, climate change is a social, economic and political issue.
- It affects the social and environmental determinants of health, including access to clean air, safe drinking water, sufficient food, and secure shelter.
- Anthropogenic climate change already results in warming and precipitation trends that claim 150 thousand lives annually.
- It's estimated that between 2030 and 2050 climate change is expected to cause an additional 250 thousand deaths per year.

4. Climate change & health 2

- Climate change affects health in a variety of ways, I'll go into that in slightly more detail shortly, but the main three ways it impacts health are through
- Infections, such as malaria, diarrhoeal illnesses, meningitis and dengue fever
- Through emergencies like floods and cyclones, drought, and through airborne dispersion of hazardous materials,
- As well as through emerging environmental challenges, like heat stress, UV radiation, pollens, or air pollution.
- Aside from the clear humanitarian motivation to protect people's health against the impacts of climate change, there are also economic motivations; by 2030 the direct damage costs to health is estimated to be between 2-4 billion USD per year.
- Areas with weak health infrastructure – mostly in developing countries – will be the least able to cope without assistance to prepare and respond.

5. Impacts of climate change on health

- For those of you who can see the slides, this next image is from the Centers for Disease Control and Prevention. I like it because it gives a really clear overview of all the other various ways in which climate change affects health.

- Many prevalent human diseases are linked to climate fluctuations; from cardiovascular mortality and respiratory illnesses due to heatwaves to altered vector transmission of infectious diseases, and malnutrition due to crop failures.
- For those who are interested in this more general area, I'd suggest checking out the work of Christie Ebi, who has done a lot of work on the health impacts of climate change.
- I'll touch on some of these a little later on, but in general we can see that more extreme weather, rising sea levels, increasing CO2 levels, and rising temperatures all contribute to changes in the environment, which in turn have impacts of varying severity on physical *and* mental health.
- I've alluded to a link between physical and mental health earlier, but I'll flag it up again now that these two areas of health are **not** distinct from each other. They very much interact. So, when we see that there are *physical* health impacts, the chances are that those impacts will have a domino effect on mental health outcomes, too. I'll get into this more later.

6. Climate change and mental health I

- Environmental changes themselves represent powerful environmental stressors. That means that seeing the environment change is – in itself – harmful to mental health, because it causes emotional reactions, including stress.
- As well as observing impacts, learning about climate change is not just a cognitive endeavour, but also an *emotional* experience due to the seriousness and complexity of the issues around CC
- Most people will get their information about CC from the media (not so many will be going and seeking out information from scientific journals, for example).
- So, media portrayals of climate change have a huge impact on how people process, appraise, and react to information.
- Studies have found that exposure to CC information via the media can cause undue stress if the media coverage is inaccurate, or if it's discouraging.
- However, effective risk communication has been found to *promote* adaptive and preventative individual and collective action.
- People who score high for environmental worrying tend to score high for pro-climate behaviours, so it seems that the two might go hand in hand to some extent.
- How we communicate the dangers around CC may influence attitudes, intentions, and behaviours: but despite this, educational research about the emotional aspects of *learning* about the issues around climate change is scarce at present
- Since climate change is an existential issue closely related to the future survival of our planet, a sense of hope could be crucial in order to be able to face one's worry without experiencing reduced well-being and increased feelings of helplessness
- Hope is what we call an 'emotional-cognitive' concept, and as such it concerns *both* positive expectations about the future *and* a related positive mood state.
- Research in health psychology shows that people who are highly hopeful are willing to take in information about health threats and act in constructive ways. In relation to global environmental problems, hope has been found to **buffer** worry about these problems from turning into low wellbeing and to help promote pro-environmental behaviour.
- Although awareness of climate change is now high in many countries, the last couple of years have seen a decline in public concern about climate change: at least in the USA and to some extent, the UK, with evidence of 'issue fatigue' particularly in the USA.

7. Climate change and mental health II

- Okay, so what are the mental health impacts of climate change?
- In terms of mental health: three classes of impact have been identified:
- The first of these are **Acute & direct impacts**, which are mental health injuries associated with more frequent and powerful weather events, natural disasters, and adjustment to degraded or disrupted physical environments
- The second class are **Indirect & vicarious impacts**, which are intense emotions associated with *observing* climate change effects worldwide, as well as anxiety and uncertainty about the unprecedented scale of current and future risks to humans and other species
- And finally, the third class of impacts on mental health are **Psychosocial**. These include large-scale *social* and *community* effects of issues such as;
 - heat-related violence [because uncomfortably warm temperatures increase irritability, aggression and violence; also, because indirectly children may become more violence-prone adults; and because intergroup conflict may increase for cultures and communities whose livelihoods and survival are suddenly at risk]
 - increasing conflicts over resources
 - migrations (sometimes involuntary) and dislocations [which then relates to loss of cultural identity]. Note that the projected population displacement by climate change is **200 million** people by 2050
 - Post-disaster adjustment
 - chronic environmental stress
 - financial hardship due to reduced income and employment in climate-sensitive industries like agriculture and tourism; loss of assets and recovery costs from extreme weather events or relocation; and increases to the cost of essential goods and services

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8. Climate change and mental health III

- It is very clear that climate change and global warming are very real, and very consequential. We are now living both with the constant threat of freak weather events (like Hurricane Katrina), and with the insidious nature of a warming climate.
- I've read that the current global COVID-19 pandemic that we're all living through can be linked to decreased biodiversity and habitats being squeezed; to the extent that these sorts of events are likely to increase in frequency, too.
- The effect of living within this environment of distress has already received attention within the research literature. In terms of the effects of CC on mental health; we know already that vulnerable populations and those with pre-existing mental health conditions are most susceptible to the effects of CC. This is an example of climate justice, but I will go into this in more detail later.

- Except in circumstances where there are freak weather events (after which we see stress reactions and PTSD), we also know that the effects of CC on mental health tend to be *gradual, cumulative*, and might only be experienced *indirectly* through media and social communication.
- In fact, some of the mental health implications of CC, such as fear and anxiety, can also impact on what type of information sources individuals seek out, and even whether they will seek out information on CC at all.
- The effects of CC are complex, because they interact and interrelate with other phenomena: such as the effects on mental health of an increasing population, urbanization (which we know has links to increased incidence of schizophrenia), and disparities in wealth and socioeconomic status).
- The severity of the impact of CC is therefore not just contingent on the weather events themselves, but also on the way that our human systems interact with the events.
- There are already a wide range of documented mental health outcomes associated with CC: these include
 - Acute stress reactions and post-traumatic stress disorder
 - Strong emotional reactions like despair, fear, helplessness, and guilt
 - Increased levels of anxiety and mood disorders
 - Increased frequencies of violence and conflicts
 - Increased frequency of drug and alcohol abuse
 - Increases in incidences of suicidal thoughts and behaviours,
 - As well as decreases in individual's sense of self and identify (due to loss of place and grief reactions).

9. Indirect impacts I

- So now I'll go into the various mental health impacts on climate change in more detail.
- In terms of the indirect impacts on mental health...
- I think this quote from research conducted in Australia really captures the essence of what indirect mental health impacts can look like... They found that
 - 25% of children honestly believe the world will end before they get older
- This hints at a real time-bomb of mental health problems for an entire generation.

10. Indirect impacts II

- New words are cropping up all the time offering a clue to the **pervasiveness** of these issues, but – as yet – we know very little about these disorders. I've listed them on the companion slides to this podcast, but they include terms like eco-anxiety, solastalgia, and ecophobia.
- It's worth considering that these 'disorders' may not represent disorders at all, but may actually be natural, adaptive reactions.

- For example, anxiety is part of our evolutionary alarm system which kicks in to get us away from danger. Just like how our pain receptors are designed to get us to quickly pull our hand away from a flame.
- In terms of 'eco-anxiety', it's reasonable to feel anxious when faced with such a huge existential threat as climate change. It's possible that this, therefore, is NOT a new type of mental illness, but rather an entirely reasonable response to a threatening new reality.

11. Indirect impacts III: global evidence

- There's no formal research at present about any of these 'new' types of climate change related mental health disorders, so at the moment we have no idea whether they are even mental health disorders at all, whether they are part of the same spectrum of illness as typical disorders like anxiety, or whether they are distinct, new 'types' of mental health disorder.
- However, what we do have evidence of are the effects on mental health of meteorological conditions, things like heatwaves.
- Higher temperatures have consistently been linked with increases in violent behaviour. In fact, historic studies dating back to the early 19th century found that hotter regions tend to have higher violent crime rates than cooler regions, a trend still echoed today.
- This is the case even when controlling for other factors that affect violent crime rates (including murder and rape); variables such as poverty, unemployment, age distribution, and culture. Similarly, aggression – as measured by metrics such as assault rates, domestic violence, burglary, theft, and spontaneous riots – is higher during hotter days, months, seasons, and years!
- The psychological mechanisms behind this are extremely complex to interpret, as many factors play a part in the expression of this behaviour. However, one hypothesis is that hotter temperatures increase the level of cortisol (the stress hormone) in our blood, offering some explanation towards the increasing incidences of irritability, violence and aggression observed during heatwaves and extreme temperatures.
- Similarly, our bodies produce more adrenaline when the temperature spikes, and there's evidence that testosterone levels increase in response to rising temperatures. This can make aggressive and violent behaviour more likely.
- People with existing mental health disorders are at increased risk of harm during heatwaves.
- The increased susceptibility to harm for this group during heatwaves is thought to be largely due to the effect of certain psychiatric medications, which can lead to people becoming dangerously overheated as a result of the effect these medications can have on normal temperature regulation and the ability to sweat.
- Similarly, those with dementia or other serious mental illnesses – issues which may affect their ability to perform appropriate self-care – are also more at risk as they may not make appropriate adaptations to protect themselves from harm. For example, they may forget to adjust their clothing sufficiently, or turn their home's heating down.
- Alarmingly, research has found that the risk of death for patients with mental illnesses increases by about 5% for every 1 degree centigrade increase in temperature.
- Similarly, above 18 degrees, every 1 degree increase is associated with a 3.5% increase in incidence of suicide, and a 5% increase in violent suicide! Both of these pieces of research were from the UK, but similar results have been observed worldwide.
- The causal reasons behind this effect are almost impossible to ascertain, however three possible speculative mechanisms have been suggested. These are;

- *sociological* (whereby patterns and intensity of social behaviours change during hot weather, such as increased alcohol consumption)
- *biological* (relating to neurotransmitters like serotonin, which is known to vary seasonally: as it decreases, impulsivity and aggression increase)
- and *psychological* explanations (where individuals behave in more disinhibited, aggressive and violent manners in hotter temperatures).
- These explanations should be treated cautiously, however, as it is rarely possible to ascertain causal links between external variables like temperature and complex human behaviours like suicide.

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12. Direct impacts I

- So, we've talked about the indirect effects, but what do we know about the DIRECT impacts on mental health of being involved directly in some kind of disaster event?
- Here are some of the mental health outcomes that have been recorded so far:
- Chronic psychological distress
- Anxiety
- Depression
- An increased incidence of suicide
- Post-traumatic stress disorder
- And compassion fatigue

13. Direct impacts: global evidence II

- Australia serves as a good model to understand these impacts because they already have the most variable climate in the world, but also because they have been in the grip of a drought for the last decade. Obviously, the devastating bushfires earlier this year are further example of climate-related impacts from Australia.
- Much of the research on the direct impacts on mental health from Australia has come from studying the effects on farmers. Note that farming is a profession with such a high incidence of suicide worldwide that it's considered a "universal phenomenon"!

14. Direct impacts: global evidence III

- It's not *just* Australia that has provided us with examples of these impacts: evidence has been collected following the severe flooding in England in the early 2000s as well as from disaster events in the USA, particularly Hurricane Katrina, which consistently echo these findings.
- Many of the flood victims in England were found to have depression, anxiety, and PTSD.
- 15% of people directly affected by Katrina developed PTSD, and half of those in the affected area developed some form of mood disorder.

- Young people exposed to high levels of trauma following Hurricanes Katrina and Gustav were found to have PTSD and depression for up to 3 years after the events themselves.
- Even professional counsellors were found to have post-traumatic outcomes, including “compassion fatigue”.
- I want to highlight some interesting neuropsychology here. Mental illness affects not only our emotional health, but it can have physical impacts, too.
- For example
- Long-term depression, particularly in late childhood and adolescence, can lead to a decrease in the volume of the hippocampus. This is a brain structure concerned mainly with memory. This can lead to decreases in emotional functioning, decreased memory capacity, and an increased vulnerability to recurrence of depression.
- Similarly, PTSD has been found to be linked to other brain structure abnormalities forming in the developing brain, leading to abnormal threat processing and abnormal emotional regulation.

15. Climate Justice

- So, what is climate justice and how does it fit with all of this?
- The concept of climate justice highlights the “double inequality” of climate change, in which there is an inverse distribution of responsibility and risk
- Developed states are responsible, and yet are forecast to confront only moderate adverse effects; whereas the least developed states are not culpable for the activity which has caused climate change, and yet experience the most significant threats to livelihoods, assets, and security
- For those of you listening who can see the slides, I’d like to invite you to have a look at the cartograms on the left-hand side.
 - The upper one shows the surface of each country expressed by the proportion of its global GHG emissions
 - And the lower one shows the proportion of people living in absolute poverty
- Climate justice therefore highlights the disproportionate impacts of climate change on the most vulnerable and marginalised human populations worldwide
- Sensitivity and exposure to physical events is influenced by manifestations of poverty and underdevelopment; where limited or poor-quality education, governance, and health infrastructures serve to magnify adverse consequences
- Even in the most prosperous nations, it is these communities which are consistently the first – and worst – hit. I’ll provide some striking examples of these later.

16. Climate Justice + Health

- As we all know, burning fossil fuels is the main driver of climate change; and this in itself produces air pollution which kills 7 M people annually (WHO)
- areas with weak health infrastructure – mostly in developing countries – will be the least able to cope without assistance to prepare and respond to the threats which CC brings: **a further example of an issue of climate justice.**
- Regions and populations currently experiencing the greatest increase in diseases attributable to temperature rise are those least responsible for the greenhouse gas emissions which are warming the planet

- I'll now run through some of the direct, indirect, and psychosocial impacts of climate change through the lens of climate justice.

17. Climate justice + direct impacts

- First of all, I'll explore the direct impacts.
- Climate change is exacerbating existing, severe mental health inequalities: an example of which can be observed in the Inuit populations across Canada, who are experiencing some of the most rapid changes in climate and environment in the world
 - Significant mental health disparities are already experienced by the Inuits compared to the non-indigenous Canadian population for example; suicide rates up to **11 times** higher than the Canadian average
 - Given the reliance of their culture and food security on place, the rapidly melting ice poses a huge threat to their way of life and very identity.
- Hurricane Katrina represents another good example; where the impacts were devastating, but highly uneven on the City of New Orleans.
- Another example of a direct climate hazard highlighting issues of climate justice is associated with Air pollution, e.g. wildfires in Australia, as well as high levels of smog in cities across the world.
 - Poorer communities can't afford air conditioners, or the best quality air masks. They have to just breathe it in and deal with the consequences.
- Thus, it is clear that pre-existing mental health disparities are set to be further exacerbated by ongoing climate and environmental changes, which are themselves disproportionately affecting those least resilient against them.

18. Climate Justice + Indirect Impacts

- In terms of indirect impacts
- Climate change threatens to undo decades' worth of development, global health and poverty reduction
- And we are at risk of a new era of "**climate apartheid**" where the rich buy their way out of rising heat and hunger.
- Climate change could push more than 120 million more people into poverty by 2030 and will have the most severe impact in poor countries, regions, and the places poor people live and work.
- the United Nations estimates that about 20 million people a year are ALREADY displaced by 'natural disasters', global warming and climate change
- The threats posed by natural disasters disproportionately affect the poor; the rich can afford a hurricane-proof home, or to live in a sustainable eco-house.
- But there are many millions around the world who don't have that option, and instead have to live with the constant state of threat that the natural world around them is posing.

19. Climate Justice + Psychosocial Impacts

- Psychosocial impacts relate to the community and social impacts of climate change, often the result of lost livelihoods and conflicts over increasingly scarce resources
- Examples of psychosocial impacts of climate change include the complex inter-relation between
 - heat and increased interpersonal violence, as well as violent suicides
 - conflicts over increasingly scarce resources
 - mass migrations and dislocations,
 - and loss of cultural identity – among many others
- Mental health outcomes after disaster events (like Katrina) have been related both to *exposure* to the event, and to subsequent *displacement, unstable housing, and lack of access to support services and employment*
- Further, families are vulnerable to an elevated level of child abuse following a disaster, possibly due to increased parental stress and decreased social support
- The image on the slide here, for those that can see it, shows a graveyard subsiding further into the sea following a string of flooding events. These images are not uncommon from the Pacific Islands and demonstrate a further example of cultural identity being threatened by climate change.

20. Summary

- **Alright, so I've given you a tour of**
- what good mental health means
- what we know about the health impacts of climate change
- the mental health impacts of climate change
- an overview of climate justice
- and some examples of direct, indirect, and psychosocial impacts through the lens of climate justice.
- To end this podcast, I'll give a few summary points of the main take-home messages we've covered today...
- **The effects of climate change aren't evenly distributed**
- **We know very little about the mental health impacts of climate change.**
- **But from what we do know, the effects can be devastating, and long-lasting.**
- **There are huge issues of climate justice within the mental health and health impacts of climate change.**
- **What better time than now, as we start to think about a new future following COVID-19, to think about how to build a climate just, sustainable, and fair future for all?**
- **Thank you very much for listening, I've been Dr Harriet Ingle. Take care of yourselves, and others.**