

[0:08 H Kennard]

Hello, and welcome to the climate change and health podcast from the UCL Energy Institute. In this series, we'll be looking at the co-benefits of climate change mitigation. What does this mean? Well, the Intergovernmental Panel on Climate Change defines them as the positive benefits related to the reduction of greenhouse gas emissions. Since we're focusing on health, this means things like avoiding harmful air pollution if we switch to electric cars, or living longer if we adopt low carbon diets. I'm Harry Kennard, a researcher in climate energy and health at UCL, and I'll be chatting to scientists and academics from UCL and beyond in the run up to COP26 the climate conference later in the year in Glasgow. For this episode, I spoke to Dr. Gesche Huebner about the relationship between climate change and mental health. Gesche is a lecturer in sustainable and healthy built environments at UCL, she has over 60 publications looking at everything from the complexities of the energy supply system to occupant behaviour and buildings. She also has the slightly dubious accolade of being one of my former PhD supervisors, I felt it was important to mention this, but I passed so it turned out okay.

So Gesche, welcome to the podcast if we could kick off with hearing a little bit about yourself about your academic background and how you became interested in climate change research.

[G Huebner 1:24]

Yes, of course. Thanks, Harry. So this might turn into a slightly long winded answer. I studied psychology and I did my PhD in a neuroscience programme studying visual perception. So nothing at all related to climate change. I had always been interested in sustainability more generally. I think my mum instilled a lot of that in myself and my sister, so about recycling and not wasting things. And I still remember, when I was maybe 11 or 12, I was always wearing my oversized Greenpeace t-shirts, buying recycled paper and giving a presentation on wind farms, in my physics class. So it was always there somewhere my life. But anyway, then I started studying psychology, and I really loved visual perception. So how do we see the world and so then our focus on that as a study area. But after my PhD, I just needed a break, I went to Kenya to manage a research project amongst the Maasai community for a few months, it was really there that for the first time, I saw directly what dreadful consequences of climate change can have individuals. So the Maasai largely live off the land and livestock and they had suffered really severe droughts that were devastating for the whole community. And I remember being told about a farmer who committed suicide after all his cattle died. And even though this particular drought might have not been caused by climate change, we know we will see more droughts, more high temperature, less rain. And of course, this will destroy communities around the world. So it was there, they just saw what could happen and then I decided that I wanted to work on a topic somehow related to climate change. And then I was really lucky to find a postdoctoral position, looking at energy consumption and buildings. And from there, I got to where I am now looking at health and well-being often related to the built environment, but more generally, also to climate change.

[H Kennard 3:05]

Thanks very much. So today, you're telling us about the relationship between mental health and climate change? What does the literature say about the direct effects of climate change on mental health?

[G Huebner 3:15]

So we know that there's a very clear relationship between very high temperatures and the number of suicides and suicide attempts. A meta analysis, so a study that brought together evidence from lots of individual studies done in 2019 suggested a 1% increase in the number of suicides for each one degree Celsius temperature increase, once the temperature passes a threshold that's specific to a location so that it varies across where you are. So it's a quite a substantial effect here. And we also know that high temperatures happening to an increase in violent crime.

Another area for which there's substantial evidence is around extreme weather events, such as flooding or storms, experiencing those has been linked to post traumatic stress disorder in particular, but also depression and anxiety disorders in generally, a higher level of stress.

We've seen this in the UK, for example, after some other severe floods that occurred between 2011 and 2014, but also really in countries across the world. So for example, in the US after hurricane Katrina in 2005, and Puerto Rico after hurricane Maria in 2017. So these are the two areas for which I would say we have most evidence, so temperatures and extreme weather events. But there are also other areas such as threatened food and water supply, that can again have negative consequences for mental health.

And obviously, displacement and migration also have negative mental health impacts not just for individuals, but also for whole communities and community health. And I also just wanted to point out right now I've spoken about the consequences of climate change, so the high temperatures and extreme weather events and the threats to food and water supply. But it's also interesting to think about the drivers of climate change. So the burning of fossil fuels, and this has been linked to mental health as well. So very recently, there have been quite a number of reports around air pollution, such as from traffic from vehicles that use petrol, so fossil fuels, that air pollution has been linked to negative mental health outcomes as well. So it's the consequences of climate change, but also the drivers of climate change will have those negative health, mental health outcomes.

[H Kennard 5:21]

How about the indirect impacts, things that aren't so perhaps so obvious?

[G Huebner 5:27]

So these definitely exists as well and they might have quite a quite a large magnitude. So one is, for example, economic difficulties. So if we just go back to these examples of hot temperatures and extreme weather events, so high temperatures can lead to poorer sleep quality, and also reduced ability to work. So for example, when working outdoors and get so

hot that you actually cannot work anymore. So then you have economic losses, and those can then negatively impact mental health.

The same is true, for example, for floods. So floods can destroy vital infrastructure that might be necessary to conduct someone's business. So you know, even if the flood itself happens 30 miles up the road and doesn't affect you personally in the sense of your home is flooded, you can still feel the effects. For example, if you cannot travel to another city anymore, if any supplies you need for your business cannot be brought to you anymore, because some infrastructure there has been destroyed. So these indirect effects will also be really important to consider when it comes to costing in the mental health effects related to climate change. It's also important to point out that the consequences of climate change, such as flooding, and storms can also destroy vital health infrastructure, making it harder to access any help when you need it the most.

[H Kennard 6:40]

Can we say anything about how inequality structures any of these impacts?

[G Huebner 6:45]

So we know in general about climate change that augments existing inequalities, so the ones who tend to be poor, tend to be more effective climate change consequences. And this is the same for mental health impacts. So in a way, these are being amplified amongst those who are particularly vulnerable. So in general, we know that poverty in itself is a mental health risk factor. Those who are poor, those who live in difficult economic circumstances, are more likely to have some mental health illness. Having a mental health illness makes you more vulnerable to another adverse effects you are experiencing. So if you are or have a mental health issue already, and you're more likely to be affected by climate change consequences, such as flooding, or storms, then you're even more likely to develop an additional or more severe mental health condition. So there are definitely some justice aspects at play here that we need to also consider.

[H Kennard 7:48]

What role does stigma play in limiting research and policy actions?

[G Huebner 7:52]

So I would say stigma plays a really important role. Mental health is still stigmatised in many countries. For example, suicide is even illegal in some countries. And so why is of course, an individual who dies, is outside the reach of the law, the family can still suffer some repercussions such as around the property and those kind of factors. And this makes it really hard to be able to measure any impacts of climate change and mental health. So for example, I tried to find suicide data for all the countries in the world. But there are actually only a few of them 100 countries that collect high quality data and suicide. So the country doesn't recognise mental health as a valid important issue, that country might not collect any data on the climate change a mental health, it will not consider mental health impacts

in any cost benefit analysis. And this might also limit international cooperation and action on this topic, which is what we really need.

[H Kennard 8:42]

Have any of the financial costs of these impacts been measured?

[G Huebner 8:51]

Not that I'm aware of, at least not in any very comprehensive way. But I think that's one of the crucial things that we have to start doing. We know that in general mental health, or rather poor mental health is associated with huge costs. So for example, the Lancet Global Health states, that poor mental health was estimated to cost the world economy, approximately 2.5 trillion US dollars per year in poor health. And this is actually projected to rise to 6 trillion by 2030. In England, to give you an example, local to here, the wide economic costs of mental illness are approximately 105.2 billion each year. And so these huge costs were speaking about, and I think will be really important to make sure that we cost this in when we speak about climate change.

[H Kennard 9:39]

And how difficult is it to track these things cross culturally? I imagine that they change quite a lot, country to country, people to people.

[G Huebner 9:47]

So at the moment, I would say this is pretty difficult. Obviously, there is quite a lot of work going on around tracking mental health globally. Not climate change related but in general, and as far as I know, it's recognised mental health disorders remain widely underreported, partly because of the stigma around mental health. And also data quality can be quite an issue. For many countries, we only have estimates of mental health or the prevalence to not actual diagnosis data, but data that kind of results from a combination of medical epidemiological data surveys in meta regression modelling. And I would say an added complication for the effects of climate change specifically is that often these data will have to be collected very quickly, let's say for example, just after a major storm had struck, they will be able to link the event to mental health outcomes. But in such an emergency situation, a lot of the focus will be on providing food and shelter, treating those physically injured, and plus health infrastructure might be destroyed as well. I think this makes even harder to link mental health and climate change than just getting data and mental health itself. If we think further, if an event that happens also leads to substantial displacement migration, and might be very hard to track and the long-term effects of people move away and live elsewhere, maybe even different countries. So this is quite a complicated issue. It is the case that we tend to agree on what mental disorders, so many countries use one of the two classifications of mental health diseases themselves. I think it's a lot more around this, getting the data together.

[H Kennard 11:27]

And this one's a bit of a big question, but how might? How might the problems you've outlined begin to be solved?

[G Huebner 11:33]

Yeah, that is a big question, and how to if I have the answer. So I think obviously, the most important thing will be to tackle climate change. So obviously, the root cause of the negative mental health impact is climate change. So we need to tackle climate change. And although most governments have policy in place to help tackle climate change, these policies will not result in the rate of reduction of greenhouse gases required, in part this year, because governments consistently underestimate how severe the impacts of climate change are, and what the benefits of mitigation though. But even if we had the most ambitious policies now, further, climate change is now inevitable. Given that we already have so many greenhouse gases in the atmosphere that will stay there for quite a long time to come. So we need to consider mental health issues now. And to do this, I think we need to make sure that mental health is put on the national and international policy agenda. So we will need to start tracking the impacts of climate change on mental health. So this means we need to de stigmatise mental health, we need to collect appropriate data, we need to develop metrics to calculate the costs of mental health implications of climate change, and we have to create high profile networks and events to champion this topic. Given them that the overall evidence around mental health impacts of climate change is relatively weak. We will also need to conduct new interdisciplinary high quality applied research to answer some of the questions in this area. And ultimately, we need to find climate change adaptation and mitigation solutions that maximise co benefits and avoid negative consequences for mental health.

Now, I'd like to say a bit more about those co-benefits. o far, I've mainly spoken about how climate change threatens mental health, climate change mitigation options can be directly beneficial to mental health. Let me just talk you through an example it's a bit longer, so I'll try to explain as clearly as possible.

So in order to mitigate climate change, one action we should be taking is to reduce fossil fuel powered traffic, remove to electric vehicles and promote active transfers such as walking and cycling. So that will reduce greenhouse gas emissions, and hence mitigate climate change. At the same time, this action can improve mental health. So we know that being active per se is beneficial for mental health. So if we are walking or cycling, this per se is good for our mental health. As I said earlier, air pollution has been linked to negative mental health outcomes. If we have fewer cars with petrol on the on the road, this will mean lower air pollution and hence, again, a positive impact on mental health, electric vehicles and active transport trade less noise. And again, noise is a mental health stressor. And so if we have less noise, it's good for mental health. Also electric vehicles and obviously active transfer produce less heat. This, especially in cities, can mitigate the urban heat island effect. So we have not as high temperatures, and which is again, good for mental health.

Then also, a lower level of air pollution and less noise can allow building occupants to open windows more, which then helps to cool buildings down and so we are less hot and we don't have those negative health implications have to warm internal temperatures.

Finally, if we provide infrastructure for active transport, so more cycling or walking opportunities, then this can reduce the surface area of roads and parking spaces. If you have fewer vehicles on the road, fewer vehicles need to be parked somewhere. So then we can create more green and blue spaces, so more trees, more plants, more water features in the inner city, those are in themselves good for mental health. And whilst of course, we would have to plant millions of trees, billions of trees in order to have any impact on CO2 concentrations, green and blue spaces can have a more immediate local effect that's beneficial again, such as reducing the heat island effect, and providing a passive system for solar control of buildings. So providing shade for buildings, which then in turn reduces the need for active cooling, so less air conditioning, which in turn is good, because this helps reduce the urban heat island effect further.

So if you managed to follow me until now, I can just summarise that if you start thinking about there's so many co benefits of climate change mitigation actions, that would be really, really helpful also for mental health. That I think, really means we should take this as a serious consideration and look at both the benefits of improving mental health. And at the, of course their costs resulting if you compromise mental health.

[H Kennard 16:07]

Finally, if you were able to get one message to the world leaders attending COP26 about this work, what would that be?

[G Huebner 16:13]

Well, I mean, I think the most important message we all have to say is act now printed large red letters with as many exclamation marks as their countries and childhood through a megaphone day at night. We need to act now. But if I assume that others get this message across, and I could be a bit more specific, I would say let's make sure to put mental health on the agenda.

[H Kennard 16:46]

You've been listening to the climate change in health podcast that was Keisha Huebner talking about mental health and climate change. If you'd like to read more about this topic, have a look www.ucl.ac.uk/Bartlett/together-climate-action. There's much more information there. It leaves me to thank Kevin MacLeod who wrote the music which appeared in this podcast. I found it on FreePD.com I hope you can join me next time. Thanks very much for listening.