

When Science Finds a Way

Season 4, Episode 7

How can we respond to extreme heat and its effect on mental health?

Show notes

Episode description:

We know how extreme heat impacts us physically, but science is still uncovering its effects on mental health. Professor Andrea Mechelli tells Alisha Wainwright what analysing millions of datapoints is teaching us, we hear from participants in his London-based research about their struggles with heat and mental health, and Mete Çoban, London's Deputy Mayor for Environment and Energy, talks about efforts to future-proof the city. Looking beyond London, Dr Benedict Weobong explains why his research in Ghana and Zimbabwe shows that local context is crucial for dealing with heat-related mental health issues, and Alisha explores how reconnecting with nature - and each other - could also help us tackle the causes of rising heat.

Mentioned in this episode and further reading:

- 'People who live near green space are less likely to struggle with mental health issues' - Professor Andrea Mechelli (<https://www.theguardian.com/science/article/2024/may/19/andrea-mechelli-urban-mind-green-space-mental-health>)
- The effects of extreme heat events on mental health in vulnerable urban communities: towards evidence-based policy and practice (<https://www.kcl.ac.uk/research/the-effects-of-extreme-heat-events-on-mental-health-in-vulnerable-urban-communities-towards-evidence-based-policy-and-practice>)
- Urban Mind – an app that measures your experience of urban & rural living in the moment (<https://urbanmind.info/>)
- Heat Exposure, Sleep, Cognition and Mental Health - HEATSCAPE-Africa (<https://www.yorku.ca/dighr/project/heatscape-africa/>)

Transcript

Music starts 00:00

[00:00:00] **Andrea Mechelli:** Still there is little recognition that extreme heat can affect our mental health. People aren't quite appreciating this, although they are experiencing the symptoms regularly.

[00:00:17] **Alisha Wainwright:** Welcome to When Science Finds A Way, a podcast about the science changing the world. I'm Alisha Wainwright, and on this series, I'm talking to the global experts who are making a difference, as well as the people who have inspired and contributed to their work. One of the consequences of climate change is rising temperatures,

and we've talked previously in this series about how extreme heat can impact our health, but there's an angle to this that isn't widely acknowledged yet: what this kind of heat does to our mental health.

Maybe you can relate to this feeling: feeling irritable or unhappy when it's super hot. And there's evidence to suggest that we see worse mental health outcomes on a population during heat waves, but we don't fully understand why. In this episode, we'll discuss how research in this emerging field is aiming to understand this problem better, and develop solutions, from the policy level to simple interventions for households.

Joining me for this episode is Dr. Andrea Mechelli, a professor of Early Intervention in Mental Health at the Institute of Psychiatry, Psychology and Neuroscience at King's College London. Andrea has a background in studying the impact of urban living and nature on mental health, and now he's leading a study to try and understand how extreme heat affects the mental health of people living in London.

In our conversation, he told me about how his research is grounded in lived experience of heat, and gave me some interesting new perspectives on how to think about this problem, and some potential solutions.

[00:01:54] **Andrea Mechelli:** There isn't gonna be a solution for everyone, a one size fits all solution. We need to look at the context, understand what is the underlying, mechanism that is causing someone to struggle with their mental health and then try and support them in a way that reflects their context and their location.

[00:02:19] **Alisha Wainwright:** Andrea and his team began their work with a systematic review investigating the existing research in the field of heat and mental health

When you began studying this area, can you maybe describe in detail some of the existing research and what you discovered?

[00:02:41] **Andrea Mechelli:** So when I started investigating this area, there was actually very little because the focus had been on physical health and extreme heat, right? So we were only just beginning to realize that, actually mental health could also be impacted. What we do know is that, during periods of extreme heat, there is an increase in emergency visits and hospital admissions due to mental health issues, and this increase is between 4% and 8%. It depends on the country where the research is carried out and the specific methodology that is being used.

But it is a very consistent finding. And of course the original studies, the first few studies were all based on associations between increased temperatures and increased rates of mental health issues. So at the beginning we were just looking at associations, but now we are trying to move the field forward and we are looking at the underpinning mechanisms, we are looking at risk factors, and we are looking at protective factors.

[00:03:59] **Alisha Wainwright:** Okay, so getting into maybe a little bit more of the detail of it, what are those gaps, those risk factors that you're looking into?

[00:04:10] **Andrea Mechelli:** So a lot of the studies have looked at, have used, millions of data points from hospital records, for example.

So those kind of studies give you an idea of whether extreme heat causes increases in mental health issues, but they don't really tell us much about how and why. So in order to understand this, the first step is to have conversations with people who are affected by extreme heat, those who have firsthand experience, and this is what we have been doing.

We've been asking, how do you feel during a heat wave? What do you normally do to protect yourself? And we've been talking to a range of people, including those who have actually experienced mental health issues during heat waves, as well as mental health professionals.

[00:05:06] **Alisha Wainwright:** An interesting feature of Andrea's research is that it is so grounded in people's experiences. One pillar of the research is focus groups with London residents trying to understand their perspectives. These insights have guided other parts of the study. Two of the participants in those focus groups were Bianca and Taj.

[00:05:28] **Bianca:** The topics that were spoken about in the focus group were relating to how each person was feeling the impact of heat in their life. From the very basic, "how does heat feel to you?" To, "what do you do when the heat gets too much?" To, "what kind of symptoms do you have in terms of your mental health?"

[00:05:53] **Taj:** I'm a diabetic and I take medication for my mental health. I suffer from anxiety and depression. When there has been a heat wave, I haven't slept properly, then the following day, my mental health is completely deteriorated. Sleep deprivation has been one of the major factors, with my mental health.

[00:06:18] **Bianca:** For example, sleeping at night, resting at night, if it's hot outside, I struggle a lot. I find that I'm tossing and turning all the time. Obviously, that then impacts on how I feel in the morning. I wake up tired or I wake up like I just want to stay in bed rather than get up and get ready for the day. And that in itself – it is just a chain reaction, isn't it – will then affect the way I work. It gets harder to go and get ready for work. And then ultimately you do feel quite irritable. So if you need to interact with other people, maybe friends, family, you might get a bit more snappy. Yeah. And obviously when you put all these things together, they definitely pile up, and become this kind of cocktail of things that end up affecting your mental health because you start to feel worse about yourself. I think there were a few girls, who mentioned that they had some underlying health conditions that were exacerbated by the heat. I think some girls spoke about some of the disorders, related to their periods, and as a woman myself, you already feel some type of heat in your body during that period of the month. And then to have to go through the heatwave – oh, God, it's terrible!

[00:07:49] **Taj:** Last year I was living in a concrete block. There was no garden. The windows were all double glazed up and just a little bit, no air conditioning, no cross wind. So I suffered quite a bit in that, I was isolating myself a lot that caused me to actually have more depression than I would normally have, and anxiety. And with urban living, if there are no parks around, with trees to go and walk around and have the shade – that affected me.

[00:08:25] **Bianca:** I think that ultimately, when any researcher will look at the impact of heat on someone's mental health, it will very much look like it's all small elements, but if you treat them separately, it will not give you this bigger picture that is actually overwhelming. But you need to look at the link between every one of those elements and realize that when you put them together, they very much make up a whole day of a person. So it may lead to a result

such as, this whole day for this person's been affected. It's not gone as it would normally go, so obviously they will be impacted by that.

[00:09:09] **Alisha Wainwright:** Thank you, Bianca and Taj for reminding me of my own experience living in Los Angeles and also in Northern California. I'll speak to my Northern California experience, because I didn't have AC when I lived up there and during the summertime, I think the worst day I can recall, it was 114 Fahrenheit. I have no idea what that is in Celsius, but it was really, really hot! No matter how you open the windows, you had fans going, I would wet the sheets with water so that it would be cool on my skin. You can't sleep. And if you're experiencing multiple days like that, your irritability just shoots through the roof and your quality of life functioning just goes out the window. And so I can really relate to them.

And another thing that Taj brought up that really spoke to me, and something I'm deeply passionate about, is when I live in Los Angeles and it's a concrete jungle and you feel like, you have to be in your car. You can't really just walk down the street, a) because it's not a very walkable city in many cases, but also because it's just so hot to walk two or three blocks, you're shaded by trees, maybe 5% of your walk. It's hard to justify getting outside. The internet will say go outside and touch grass, well, it's actually really hard in a lot of urban areas to get outside and touch grass and be shaded and be cool. So that's my experience and, with the heat waves in London, I'm sure you can attest to what it's like living in an urban setting.

[00:10:50] **Andrea Mechelli:** Yeah, absolutely. And what's interesting is if you ask people, "do you struggle with your mental health during a heat wave?", the vast majority of people will say "no, actually I quite like the heat".

Particularly in places like the UK. Hot temperatures are still considered a good thing. But then if you ask them "how do you sleep during a heat wave", they would say, "oh, it's terrible. I really struggle. I can't sleep." And how is your energy during a heat wave? They would say, "I feel exhausted. I can't work. I can't concentrate."

And what this is telling us is that still, there is little recognition that extreme heat can affect our mental health. People aren't quite appreciating this, although they are experiencing the symptoms regularly. And also another aspect of the findings, which I think is very interesting: everyone is affected, but some people are more affected than others. Particularly those who have a preexisting mental health condition or a physical health condition, they would say that they struggle more, they're more worried about it. And also the exposure that you have. So for example, if you live in a poorly insulated house without air conditioning, of course you are gonna be exposed to greater heat, and that's going to affect your experience and your mental health. So there are huge inequalities, I would say mental health, physical health inequalities, which affect people's experiences.

[00:12:38] **Alisha Wainwright:** I actually, I'm gonna jump in. I'm just thinking to Bianca's point about, and my own point about not being able to sleep in some instances. When you're talking to someone who is in a lower socioeconomic situation, they can't afford air conditioning or moving or something that someone who can mitigate their problems more easily can, what do you tell someone like that? Because I just wonder, how do we help them in instances where they might not be able to change the circumstances of how they sleep?

[00:13:17] **Andrea Mechelli:** It's very complex. But first of all, you want to make sure that they take care of themselves. They don't put themselves in a situation where they might be at risk of a mental health crisis, for example.

So that is vital. So you want to provide them with very basic information about things they can do to protect themselves, drinking, avoiding being outside at the hottest time of the day. Very simple advice. But one activity that has come up again and again in our focus groups is also talking to people and sharing the fact that you're struggling. Because that makes people feel like there isn't something extraordinary about what they're going through. It's a shared experience. So simple things like this can help in the short term, you're absolutely right. They're going through something that is complex, because extreme heat is just one of many challenges that people often experience at once.

And so it's important that we don't just try and help people adapt, but we zoom out, we look at the big bigger picture and say, there are mental health inequalities, there are all sorts of inequalities, and there are other global challenges like biodiversity loss and disconnection from nature. And all of these are interacting with each other, and we need to somehow embrace the complexity of all of these and recognize that all these multiple challenges are interacting with each other and overlapping.

[00:15:02] **Alisha Wainwright:** It sounds like you have a lot of research going on, and I'm wondering if you can just spell out to me some of the pillars of what you're currently working on.

[00:15:14] **Andrea Mechelli:** So extreme heat and mental health is a very complex topic, so we are trying to use a diverse range of methodologies and data sets to try and better understand that. For example, we're using, electronic hospital records, to see how rates of mental illness change in response to changes in ambient temperature.

We have also developed a smartphone app to follow people over time and try to understand what happens in their life when they have a mental health crisis, or when they struggle with minor mental health issues, during periods of extreme heat. We've also done a survey with 3000 participants to try and understand how people feel about extreme heat, whether they're worried about their mental health, whether they've experienced issues with their mental health. And also we are talking to people. We've carried out several focus groups with members of local communities, trying to understand their everyday experience and what kind of practical solutions they have developed, and what kind of practical help they would like. So the idea of our project is to integrate all these different types of information, and then share it with members of the community, but also with the policy makers and the developers and the researchers, and try and have some kind of cross-pollination amongst these groups that don't normally talk to each other much.

[00:16:57] **Alisha Wainwright:** So do you have any results from your research so far that you can share?

[00:17:02] **Andrea Mechelli:** So what we have found is that increases in mental health issues that had previously been found in traditionally hot countries like the US or Mexico or China can also be seen in the UK. That was the first step. And then we've been looking at mechanisms. Why is it that we struggle during periods of extreme heat? And we've identified multiple mechanisms, multiple reasons. For example, there are physiological reasons. Some individuals who take certain types of medication will experience heat in a more extreme way. There is dehydration, there is increased heart rate. These physiological changes can affect

mental health, but there are also psychological reasons people often worry about extreme heat. They tend to feel anxious, stressed, sometimes even depressed. That can exacerbate their mental health. There are also behavioral reasons. For example, we heard earlier that one of our participants struggled to sleep. Other people might exercise less. And we know that exercise is key to mental health. And then there are also social mechanisms. So for example, we are less likely to socialize if you're feeling tired, if you're feeling really hot, too hot to see anyone. And for some groups like farmers, there might also be financial pressures associated with extreme heat. So as you can see, there are different mechanisms, different ways in which extreme heat can affect mental health. And this is important because it means that there isn't gonna be a solution for everyone, a one-size-fits-all solution. We need to look at the context, understand what is the underlying mechanism that is causing someone to struggle with their mental health, and then try and support them in a way that reflects their context and their location.

[00:19:23] **Alisha Wainwright:** Context is so important here because ideas of heat and mental health are heavily influenced by culture. For example, what is considered extreme heat might be different between say, the Caribbean compared to Eastern Europe. And a population's experience of high temperatures is impacted by a range of factors – infrastructure, lifestyle, economics, et cetera. Any research trying to understand heat's impact on mental health has to be conducted with this local context in mind. To get a better idea of how this kind of research is being conducted around the world, we heard from Dr. Benedict Weobong. He's a global mental health epidemiologist working at York University in Canada, and he's about to begin a project called HEATSCAPE-Africa. This is a study that will examine how extreme heat correlates with poor mental health outcomes, collecting primary data across sites in Zimbabwe and Ghana. I brought this interview into my conversation with Andrea to see if there was common ground here. Like Andrea, Benedict is trying to develop an understanding of the mechanisms behind heat's impact on mental health, but there are also obvious differences between London, Ghana, and Zimbabwe in terms of temperature as well as cultural understandings of extreme heat and mental health. Benedict made the point about why it's important to conduct this kind of research in a way that's informed by the local culture, and he also told us about how his work was inspired by a very relatable conversation with his young daughter while they were living in Ghana.

[00:21:06] **Benedict:** So my daughter tells me, we're just having a conversation, a father-daughter chat. And, then outta the blue she comes up with, "do you know, do you know when I was in school in Ghana? In the afternoons I usually struggle to concentrate. And it happened mostly with math." And I said, why? Well, math requires you to be able to concentrate. Math is processing a lot. You need to process and think a lot about it. "But in the afternoons I struggled to do that", and that's really what inspired me and I started wanting to dig into this piece a bit more. There is good evidence, at least from high income countries, about the relationship between heat-exposed people or people who have experienced heat conditions or extreme heat conditions, and poor mental health, mostly from high income countries. Particularly depression and anxiety.

What we don't know and is really just beginning to start now is the research in low and middle income country settings. Before we set out to do this, we did a, quick search of the literature, trying to understand who is in this space, what has been done already. We only found one study, somewhere in Asia that looked at this question. So yes, that's the kind of gaps that we have, that we're trying to plug.

Yeah, it's so important to do research that is valid for the people for whom we are doing it or within the setting that you're doing it. Culture plays a huge role in our understanding of everything and how we process, how we act, how we behave. Our attitude towards health

culture underpins everything. 'cause it's a belief system. You don't want to risk creating the situation where you are using information or data that pertains to a certain culture in some place and wanting to apply that into a different place. And that's why we are doing HEATSCAPE and more of HEATSCAPE should be done, or things like HEATSCAPE. And doing more research in low and middle income countries is so very important because then we can address, answer local problems or local questions using local knowledge.

In fact, it's one of our core objectives, to come up with an intervention framework that we can then test, hopefully following, after HEATSCAPE. And so we will be working with the health system, empowering them to think about, you know, maybe recognizing that this is a heat related condition that has been presented in the health system. Within the community, we'll work with community folks to come out with local solutions. One of the things we are thinking about doing is maybe early warning systems. So that is something that we can work within the kind of settings we are looking at, we already have that kind of structure where communities have a way to communicate. So they have these community address systems, public address systems. So we are thinking, we could have messages, warning messages. So essentially these kind of heat warnings, if you like, delivered in a very local and acceptable way. One of my colleagues, the co-investigators on this, Newton, has actually done a lot of work in Zimbabwe, working with indigenous people in terms of how to harness indigenous knowledge in doing this, and one of the things that they talk about a lot is even the housing and the structure of the houses, and coming up with roofing using locally produced roofing material. It is made of mud, and it makes sense why that is the case because clearly they're not conducting heat.

So we will have to think innovatively about things like that. And, for us, we want to come out with a mental health heat plan. We want to work collaboratively with the local folks. And then we come out with these mental health heat plans that we can then train community leaders, to provide education, early warning signs or information, but also, tips about the importance of hydrating and drinking lots of water in those particular dry seasons. Most of what I'm saying about already exists. We just have to try to see how we can repackage that into a coherent framework that we can then share with research participants and the committees that we're working in.

[00:26:00] **Alisha Wainwright:** I saw you nodding your head a few times during Benedict's talk. I'm wondering if there's some stuff that stood out to you that he said that resonates with you.

[00:26:12] **Andrea Mechelli:** Yes. What resonates with me is the idea that we need to move away from a narrative where we have lots of abstract global temperatures and say, look, temperatures have been this high, and we need to look at the lived experience, members of the community, how they're experiencing heat. What practical solutions have they found? What practical help would they like? We can learn so much from communities, and absolutely what applies to a high income country might not apply to a low income country. So we do need to have those conversations with local communities.

[00:27:01] **Alisha Wainwright:** How important is it to consider local context when you are doing research like this?

[00:27:07] **Andrea Mechelli:** It is incredibly important, and I must say for research, sometimes it's difficult to focus on the local context because we would like to find solutions that can be generalized, can be applied across the board. This is what we've been trained to do. But actually we have to be humble and recognize that mental health is culturally

determined and heat is culturally determined and many other factors that are interacting with mental health and heat, for example, biodiversity loss, and they're all localized phenomena. So we do need to talk to people about their experiences, and develop solutions that take the local context into account. Absolutely. Otherwise we might come up with something that is meant to be generalizable to many different communities, but it's just not going to work.

[00:28:14] **Alisha Wainwright:** So when I'm thinking about interventions. I wonder, how do you categorize interventions in a bottom up approach and how do you categorize them in a top down approach?

[00:28:26] **Andrea Mechelli:** When we talk to people about their experiences of extreme heat and what practical solutions they have developed and what practical help they would like, we then share this knowledge within our local communities – this is what I would call a bottom-up intervention. But we are also using our scientific findings to talk to the policymakers and try and influence policy decisions. So this is more of a top-down approach, which we are also following. So we have multiple conversations which are leading to not just bottom-up strategies, but also hopefully changes in policy, changes in the way developers build homes, and for example, in London right now, a heat plan is being drafted. The London Heat Plan is being drafted to protect people during periods of extreme heat. So we are talking to those who are drafting the plan, sharing our findings, and also sharing what we have learned through our conversations with members of the community. And we are trying our best to influence what will go into this London Heat Plan. So we are trying to be multilingual in a way, working with communities, but also working with developers and policy makers.

[00:30:03] **Alisha Wainwright:** The London Heat Plan is an example of local policy makers trying to deal with this multifaceted problem of rising temperatures. Mete Çoban, the Deputy Mayor of London for Environment and Energy, told us more about the plan.

[00:30:20] **Mete Çoban:** The London Heat Plan is really important for us, because what we're starting to see here in London, but actually in so many parts of the world, is that climate change is no longer a distant threat. We're starting to see the impacts of it here and right now, and last year in London we had four extreme heat waves, and the difference between these heat waves and previous heat waves that we've had is that these were for much longer sustained periods. What we wanna do is make sure that we have a plan ready for London, so that we can make sure that Londoners are supported through those extreme hot weather that we have here in London.

First and foremost, we wanna make sure that Londoners feel like they're at the heart of this plan. And that's why the survey for us was really important. And we had over 3,500 respondents to that survey. and there's other ways in which we're getting young people. We had London's first Youth Climate Summit last year as part of London Climate Action Week, where they also fed into this plan too.

But then of course, we also wanna make sure that we're speaking to some of our emergency services, those at the front line who are gonna be dealing with the impacts of extreme heat, for example. But then, of course we also wanna be talking to some of our community organizations, community-led organizations that actually work with some of our most vulnerable groups to really understand their lived experiences and how this plan essentially could really enable them to go about living their life in a way that doesn't impact them, or actually enables them to thrive as well. And so mental health, of course, is a huge part of that. We already saw the devastating impacts, in Canada in 2021, where 8% of the heat

related deaths were people with schizophrenia. And in addition to that, there are pre-existing medical conditions and certain medications, especially, where people are vulnerable. High temperatures can really exacerbate some of those symptoms. And so we want to learn not just from our own Londoners' personal lived experiences, but also what's happening around the world. Because we are seeing how extreme heat exacerbates mental health conditions.

We're not starting from a scratch. We've already been working, to make sure that we're dealing with the impacts of extreme heat. And one of the great things that we launched a few years ago was something called the Core Spaces map, where we essentially have listed where Londoners can go to, when it feels really hot. So whether it's spaces of green shade, whether it's libraries, community centers, for example, if your home is too hot and you're working from home, then we've got cool spaces where you can find like a local community center or library next to you where you can go and work from on the day. The other area is around, "how do we make sure that we plant more trees on our streets, to make sure that we've cool temperatures across our streets. We've planted 620,000 trees since 2016, and then. In addition to that, we also wanna make sure that Londoners are hydrated when we have these extreme, hot temperatures as well. So that includes over thousands of water refill points, but also over a hundred water fountains across our city as well. We had something called Operation Helios. in response to the extreme heat, temperatures that we had in 2022. And what we've done was we brought together 80 agencies that will be able to work together as a response to extreme heat. So that includes, like the London Fire Brigade, our health agencies, and some of these other agencies as well. We are well prepared and we've been doing lots of work to make sure that London is prepared for extreme heat. What this plan will do essentially, is have a much more systematic approach to how we deal with heat.

[00:33:45] **Alisha Wainwright:** The idea of top down and bottom up interventions also came through from Bianca and Taj who took part in those focus groups about extreme heat in London. When we asked what could be done about extreme heat and mental health – as individuals and families, and on a broader level as employers or governments – this is what they had to say.

[00:34:09] **Taj:** As a society, I think there should be much more awareness made. As I mentioned, before this project, I wasn't really looking into it as something that would affect me, but now that I know it does affect me and other people as well. I think that there should be much more information out there, perhaps through the doctors or therapists just giving us advice on how we can cope better?

[00:34:36] **Bianca:** Yes. It is that this kind of change can only be done by, people in leadership positions across the city, from the council leaders, the parliament, the government. It's just things that they need to start looking at. Moreso, as you mentioned yourself, we are very much in an age now where people are very much aware of their mental health, and they're trying to make changes in their lives, and it would be very nice to know and be considered by the very leaders of the city that you live in when it comes to the quality of your living there.

[00:35:18] **Taj:** If there is another heat wave, I would definitely prepare myself much more, go online and check, when the heat wave is coming, the dates, and perhaps then rearrange my meetings, appointments that I have. Perhaps look at organizing to meet up with family and friends only in the evening when it's cooler.

[00:35:45] **Bianca:** What I do during the heat wave is generally I try to, as soon as I notice the sun's coming out, I try to have the curtains pulled so that I can keep the sunlight out of

the flat. And then when the sun is finally out fully, I'll close the windows, shut the curtains. And maybe turn on a few fans around the flat to try and keep the temperature cooler.

[00:36:15] **Taj:** Green spaces and parks, walkways. I think they're absolutely relevant, extremely important, for people with mental health issues. I found that when I do go out for a walk, I have a disability, so it's not as easy, walking too much. But going out into green spaces, I definitely feel calmer.

[00:36:43] **Bianca:** And there are certain parts where I will specifically go, and I have a bit of a worse mental health day, such as those where there's a lot of greenery and there's more space between people. I think that if the city would consider having more of these urban spaces mixed with nature's elements, I think that would really make the difference for people, from the fact that the trees and grass and plants will be able to absorb some of that heat, to the simple fact that it gives you that refreshing feeling of being near nature while still being in a massive city. I think that would be a beautiful combination both visually and mentally to give you a bit more relief and relaxation.

[00:37:35] **Alisha Wainwright:** So I'm thinking about people who might be listening to this podcast and I'm trying to envision a family of four who live in an area. They've just been warned that there is an oncoming heat wave through an early warning system. If you had to just send them a message, what would you tell them to do to mitigate some of the challenges of the oncoming... my made -up, oncoming heat wave?

[00:38:08] **Andrea Mechelli:** So there will be simple things that they can do, that we can all do to minimize the impacts on those days that are especially hot. For example, we try and go to some cool places if these are available to us,

[00:38:25] **Alisha Wainwright:** Like maybe a library or public spaces that have air conditioning, something like that, maybe?

[00:38:32] **Andrea Mechelli:** Yes. And in fact, in places like Italy now, we have cool spaces that have been designed for heat waves where members of the community are encouraged to go and rest and socialize while the heat wave is on. So there are simple things like that. Of course you don't want to spend the day outdoors if it's very hot. You wanna try and protect yourself from the heat. you can try and ventilate your home. There will be practical activities like this that will help mitigate, during a heat wave. But I also think we need to zoom out and look at the bigger picture.

Why are we experiencing more frequent and more extreme heat waves? What can we do to change these in the long term? And I think the answer is in reconnecting with nature, reconnecting with our neighbors, taking care of the street where we live. There are many activities that will make us feel more connected. And I do think those kinds of activities will also make us more resilient and in the long term will also help decrease, the problem in the first instance. They will, hopefully, mean that temperatures are not going to continue to rise. So I do think there are things we can do in the short term, but also we need to think big.

We need to think, "what's at the core of all of these?". It's our extractive mindset, the fact that we are increasingly disconnected from nature. We see the natural world as something to command, to consume. Reconnecting with all of this is the first step.

[00:40:41] **Alisha Wainwright:** I really like that. I was not expecting you to say that. And I actually think that oftentimes, especially living in an urban setting where it is hot, you are constantly thinking about in the moment when it's hot. And something that you've reminded me to consider in my own personal life is – on a day when it's not so hot, and I feel like I can –going outside, taking a walk, connecting with my community and the nature that I have access to, will enrich my mental health and help me start to understand the value of maintaining those spaces, so that when it does get really hot, we can have something to work towards and it's a reminder of, hopefully in the future as we care more about nature and our community, we can make meaningful steps too potentially reduce the amount of days we get that are so hot.

[00:41:43] **Andrea Mechelli:** Yeah, absolutely. And this is not just something idealistic. For example, we do know that urban nature is key to reducing temperatures, because there is less concrete absorbing heat during the day, through shading, temperatures stay lower. So it does make a real difference. We also know that not all nature is the same, brings the same benefits because, for example, greater biodiversity, greater variety of trees, is associated with better protection from heat, and, less extreme impacts on people's mental health. So, as you say, when, you're feeling good and it's a warm day, but not too hot, even taking care of the trees on your street, taking care of the local park and promoting biodiversity, and I'm talking about insects and wildlife and plants and trees, it will make a difference in the long term, a practical difference.

[00:42:51] **Alisha Wainwright:** So would you say that's a mentality that we could change when we think about heat and mental health?

[00:42:59] **Andrea Mechelli:** I think so. I think if we just focus on heat and mental health and we forget that these are connected with everything else, then we are missing the point. It's a missed opportunity if we recognize that our mental health is connected to our environment, and heat is also a problem that stems from our disconnection from the environment. And, we look at it as an, as a network, then I think we, we have a chance. But the first step is to recognize this complexity, this interdependence.

[00:43:37] **Alisha Wainwright:** I really loved this conversation. I think that. I came in a little, not hardheaded, but very, how do we deal with the current heat issues that we're experiencing right now? And what I'm taking away from this conversation with you is, yes, that is an important conversation about how heat impacts mental health. But beyond that, it's a very complex topic. And if we don't connect with our community and the nature around us, how are we ever gonna get to a place of some sort of mental harmony? So thank you for your time and your thoughts. I've been invigorated.

[00:44:20] **Andrea Mechelli:** Thank you. It was great to talk to you.

[00:44:23] **Alisha Wainwright:** As someone who lives in LA, talk about heat waves is close to my heart, and there was a lot in this discussion that was very practical and relatable: how our mental health might suffer in heat waves; or how to keep cool when temperatures are sweltering. But I also loved the broader perspective Andrea brought into this conversation, the bigger picture of nature, connection and community.

Thanks for listening to this episode of When Science Finds a Way. Thanks also to Dr. Andrea Micelli and to our contributors, Bianca Tecu, Taj, and Dr. Benedict Weobong. If you enjoyed this episode, make sure to follow us wherever you get your podcast, and subscribe on YouTube.

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