

Dr. Sara Gorman:

Confirmation bias, which many people have probably heard about, is this need to fit in any new information with a belief that you already have, and you also will seek out information that agrees with you and avoid information that doesn't. This is very problematic because people don't even let the new information in that might be inconsistent with what they believe and it makes it almost impossible in certain situations to change your mind, because you are totally impervious to new information.

LuAnn Heinen:

That's Dr. Sara Gorman, an expert in health misinformation and science denial. She's the author of *Denying to the Grave: Why We Ignore the Facts That Will Save Us*, a book she co-wrote years before the Covid-19 pandemic and updated in 2021. Sara is CEO and co-founder of Critica, a non-profit committed to making rational decisions about health and safety, advancing public acceptance of scientific evidence, and promoting informed health decision-making.

I'm LuAnn Heinen and this is the Business Group on Health podcast, conversations with experts on the most relevant health and well-being issues facing employers.

Today, Dr. Sara Gorman and I discuss why we so often don't follow the science when it comes to vaccines, nutrition, and other health and safety decisions.

Sara, I'm so glad you're on the podcast today. I'm excited to talk to you about misinformation. Let's start with what it is and why it has inspired your work.

Dr. Sara Gorman:

Misinformation goes by a lot of definitions, but the most common one, especially in the health world, is that it's misleading or inaccurate or false information that is spread regardless of the intent of the person spreading it. So different from disinformation where the person spreading this disinformation has to have the intent to deceive people. It's very prevalent nowadays. It's always been a problem, but it's very prevalent now in part because of the internet, social media, how quickly that kind of information can spread and some things that we're learning about some of the algorithms of social media that make it even easier for misinformation to spread and catch on.

LuAnn Heinen:

Why is it that good, solid information developed by scientists put out there in the world going maybe through public health officials to the population, why is that kind of information not taking hold and why is there so much debate about what's true?

Dr. Sara Gorman:

I think there are really three reasons that that kind of good information doesn't always take hold. One of them has to do with the way science itself unfolds. So there's a lot of uncertainty, a lot of change that happens as we learn about a new scientific topic, for example the Covid-19 virus, and people are not comfortable with that uncertainty, so they turn towards sources that give them more certainty, which tend to be misinformation because as we know, that level of certainty is really not possible in a lot of scientific areas, especially when we're beginning to explore something. That's one of the reasons. I would say another reason is because this kind of scientific information, the correct kind, is often still communicated on channels that people don't really use, so on the radio, on television, on websites like the CDC website, but these actors are not prevalent enough on social media to really make the good information stick and spread in the way that the bad information sticks at spreads. Then I would say the third problem, and this is the topic of a new book I am writing, is that the trust in the health care system is very low right now in the population. That has fallen for a variety of reasons, and when that is there underlying everything, it's very hard for people to believe anything that they read that comes from really solid, good scientific information.

LuAnn Heinen:

To recap, we want certainty, a lot of the best science is coming through the less-used communication channels, and as a public, we have low trust at this point in time. What about people who genuinely want to find out the right answer? Should I be eating saturated fat or not for a healthy diet? What's the truth about the vaccine schedule that's appropriate for me? Should I be taking the next Covid vaccine? Why is it that it's difficult even when you're really looking for it to know what's true?

Dr. Sara Gorman:

In some of those areas, as I alluded to earlier there's still a lot of uncertainty, so anything to do with nutrition research can be very up in the air, because it's very hard to study the effects of certain types of nutrition on health because we can't really randomize people to eat or not eat in a certain way, and so a lot of what we have is just observational studies that really just follow people over time and that don't always tell us if those diet factors are causing the health outcomes. There's a lot we don't know and I think that's part of the reason people are perpetually confused about things like saturated fat and other nutrition questions. In terms of some of the other areas where hopefully we have more straightforward answers about vaccines and other health issues, getting good information, one way to do that is really to talk to your health care providers, if you have them, but part of the problem with that is that there's not great access to health care providers in certain parts of the country and among certain populations and health care providers are very, very pressed for time. Sometimes it takes more time and effort to really talk to somebody about the evidence, the uncertainties, the certainties that might be present about a certain question. I think it still is the case that you can look at the CDC, you can try to ask your health care provider, and then there are a lot of other resources and really individuals who have become really great science communicators who really should be trusted to provide some of this information.

LuAnn Heinen:

That's good to know. There's also a situation or many situations in which we seem to ignore science, even science that's pretty settled. What is it about the feelings, biases, or social influences that affect our beliefs?

Dr. Sara Gorman:

There are a number of factors that cause "science denial" or not following scientific evidence and I outline about six of them in my book in each chapter, *Denying to the Grave*. I'll give a highlight of a few. One issue that cuts across all the problems that people have with health information is risk perception. So human risk perception is very complex and very psychological, but the way that as scientists we approach communicating at risk assumes that people are completely rational. We assume that if we give people the correct statistics, they'll make the right decision or the evidence-based decision, when in reality people have skewed risk perception. To give just one example that should be familiar to a lot of people, our sense of risk about driving a car versus being in an airplane is very skewed and part of the reason why we tend to think that being in a car is safer than being on an airplane, when it actually is the reverse, is because we have to, because a lot of us rely on our cars for transportation, so we create stories in our head to back up what we're actually doing, but also that idea about plane crashes is much more prevalent in the media. When it does happen, it gets a lot of attention, and this is called the availability bias, where you tend to believe that something that is very available in your mind is really more common than it actually is. So we don't see a lot of car crashes covered in the news, but we do see the plane crashes and then that becomes a very vivid, memorable image about which one is more risky.

LuAnn Heinen:

I like the stat you had in your book, death by falling in the shower is 2000 times more likely than dying in a plane.

Dr. Sara Gorman:

It can be very surprising the things that we don't think about that actually have a higher risk attached to them and how we do downplay those risks, especially if it's something we have to do like taking a shower. It's

uncomfortable for our mind to have that kind of dissonance where we know it might not be safe, but we have to do it anyway. So we tell ourselves that it's safer than it actually is.

LuAnn Heinen:

So we're not good at risk perception and probability. What else?

Dr. Sara Gorman:

In a lot of science denial movements, as I would call them, there are a lot of social factors that tend to really contribute to people's belief in things that aren't true. For example, I have a chapter in the book about charismatic leaders and each one of the science-denial examples I discussed in the book, things like anti-vaccine, anti-GMO, gun control, all of these sort of health topics that have various levels of people not believing the facts about them. There are often charismatic leaders at the helm and the charismatic leaders create a very strong sense of group identity. They're also very persuasive. What happens is that once people are in the group, even if it's a virtual online social media group, they start having group psychology as opposed to individual psychology. This does a couple of things. One of the things it does is it really skews your risk perception even further. So you might assume that something that the group is doing is not risky because you assume that the rest of the group has already looked into this and you don't need to look into it yourself. So you kind of offload a lot of the work you would normally do to understand the science to other people in the group. You also have a very strong, especially if this group is important to your identity, you have a very, very strong psychological reason to want to stay in that group, and so you will encounter a lot of resistance from your own mind to disagreeing with anything the group believes.

LuAnn Heinen:

There are some unbelievably charismatic leaders. I spent a little time on your website looking at some of the influencers, bodybuilders and kinds of credentialed scientists, seemingly credentialed scientists, espousing things that can't possibly be evidence-based.

Dr. Sara Gorman:

Yes, there's a phenomenon called fake experts that's really big in misinformation peddling. So people, especially in the sciences, it may be people who have a PhD in a completely unrelated area, so a PhD in chemistry who is giving their opinions about the safety of vaccines. Of course, we know that that person doesn't really have relevant training to be able to comment on the studies around vaccines, but when people see that PhD and usually the person will play up that they're a scientist and kind of hide the fact that they don't have a degree in a relevant field, when people see that PhD, they believe that the person is an expert. That is a very common tactic that's used by people who spread mis and disinformation.

LuAnn Heinen:

Then you combine a charismatic leader with credentials that seem real, even more powerful. Tell me about the quote in your book when you were talking about confirmation bias attributed to Yogi Berra, "I wouldn't have seen it if I didn't believe it."

Dr. Sara Gorman:

That's a great quote and I'll never know if Yogi Berra was thinking about confirmation bias or not, but that is actually a great encapsulation of what it is. Confirmation bias, which many people have probably heard about, is this need to fit in any new information with a belief that you already have and you also will seek out information that agrees with you and avoid information that doesn't. This is very problematic because people don't even let the new information in that might be inconsistent with what they believe. And it makes it almost impossible in certain situations to change your mind, because you are totally impervious to new information. It's very challenging in a scientific situation when we know that the whole field is built around falsifying. We're always looking to show that the last experiment was not really true, and that's sort of how science proceeds, and so there are sometimes reversals, more often than people would like to think, when you can't let new information in because you've already formed your opinion. It's a real problem.

LuAnn Heinen:

Oh my gosh. That one really resonates. None of us really like to change our minds when we're wed to a particular belief. I think about so many people I know who think that anything with saturated fat is going to cause a heart attack, and a lot of that research was debunked, but we've been very slow to accept.

Dr. Sara Gorman:

Yes, and that is a case where there was probably also some interference with people who had vested interest in sort of keeping the fat-free line of business sort of front of mind for people and suggesting that you have to get away from the fat as the most important health goal. But again, it is still something that's being played out in the scientific field, because we don't really fully understand how any kind of nutrition contributes to chronic disease and bad health outcomes.

LuAnn Heinen:

What are the consequences of denying science? What are the impacts on us?

Dr. Sara Gorman:

I was really struck by this when I was working on my second book, which is coming out next summer, and I did a lot of interviews with people who either self-identified as having low trust in the health care system or had family members who believed conspiracy theories or misinformation about a lot of health topics. I was really struck by the number of times I heard, especially the family members describe that they had relatives, sometimes it was even a parent who actually passed away because they refused to seek medical help. So always this question about would this person have survived if they sought medical help, because they didn't want to because they had become so distrustful and so pulled into sort of a vortex usually on social media or online that's very anti-science and very anti-medicine. The consequences are real. It is true that in the research world, we're still trying to really map out what are the direct health consequences of believing misinformation, but there are strong signals to suggest that, for example, people who don't believe that traditional cancer cures like chemotherapy and radiation are safe or necessary and go to be treated fully with supplements and natural treatments have worse outcomes. They will die at higher rates than people who follow the prescribed treatment. There are studies out there that show that there's a direct impact of misinformation, conspiracy theories, science denial, on people's health and well-being.

LuAnn Heinen:

What other public health examples stand out to you?

Dr. Sara Gorman:

I know I mentioned vaccines a few times. That's always a big topic and has really morphed over the years in terms of who believes anti-vaccine sentiment and why they believe anti-vaccine sentiment. That's been the one that I've been most focused on throughout my career, but there are other areas as well. I mentioned earlier I've gotten more and more interested in the issue of misinformation and cancer care, because there is some good data that this really does lead to really bad outcomes for patients who don't allow for traditional treatment. I also think that there are some other areas that are not talked about as much. One of the ones that I talk about in the book is around mental health. There's a lot of misinformation around mental health, but one that's really been misconstrued is actually one of the treatments for severe depression, which is electroconvulsive therapy or ECT, which has gotten a reputation for being painful and very unsafe, partly because of the movie, *One Flew Over the Cuckoo's Nest*, where ECT is depicted without any anesthesia. Of course, that's not how it's done today. It's done with anesthesia, the patient doesn't feel any pain and it has very few side effects and can really be lifesaving for people who are not responding to other forms of therapy. Unfortunately, it's been so misconstrued and there's been a lot of protests against them. It can be hard to find hospitals that provide this service, at least on an outpatient basis. So it's become something that's hard to access in part because there's been a public outcry against it. I think that's a really good example of where misconstruing the risk has become very damaging for people's health.

LuAnn Heinen:

I'm really sad to hear that. Why are scientific misconceptions so difficult to overcome? You touched on that a little bit earlier. We don't like to change our minds and so on. What else would you say?

Dr. Sara Gorman:

One of the things I learned writing *Denying to the Grave* was that the way that science proceeds and the way that our brains work are actually kind of incompatible. So science proceeds, as I mentioned before, through falsification. We do an experiment and then someone else comes along and tries to replicate it and it either works or it doesn't work, but we're constantly learning often through negative results, often through seeing that I wasn't able to replicate this and the next five people weren't able to replicate it, so maybe it's not really a real signal. The problem is, and part of this has to do with our university and media infrastructure, once that first study is reported on and people catch on, then they form an opinion. This is actually kind of dangerous, because when you form an opinion, in most cases, you're not going to reverse it.

I would challenge everyone who's listening to think about a time when they actually changed their opinion, and there's probably only a few when that really happens for most people. It is shown in neuroscience when people are asked to endorse something that they don't believe in, there's a part of their brain called the amygdala that lights up, which is really the fear center. There's this very strong, almost primal fear, about wadding into unknown territory, changing what you think is true, and it's really terrifying for people. I think the problem is we have these two contrasting systems, one that's really about finding out through changing our minds constantly what's really the truth, and the other that's really going to be mostly focused on ways for you to maintain the belief you already formed.

LuAnn Heinen:

That's so interesting and it reminds me of something that you wrote about, which is that when we see information that confirms our current beliefs, we get a dopamine rush.

Dr. Sara Gorman:

Yes, it's very rewarding. That's the reward system. It's very rewarding to be able to see something that really is in line with what you already believe, and it's sort of like being gratified that what you thought was right. I would also say there's another part of your brain that actually gets suppressed when you're asked to disagree with yourself, which is the prefrontal cortex, and that's the reasoning part of the brain. When we think about confirmation bias, part of what's happening is that if someone's in a space where they really have a lot of confirmation bias, if you give them new information, they might not even be able to process it because their brain is kind of lit up the amygdala and suppressed the prefrontal cortex. Even though you're telling them facts, they can't process those facts because that part of their brain is not really functioning because they're trying so hard to hold on to what they already believe. So as soon as someone feels threatened, their reason centers will shut down.

LuAnn Heinen:

Oh, wow, that's really interesting. All of this since brain scanning, right? MRI technologies, that's when all this research began.

Dr. Sara Gorman:

Yes, most of these studies are using functional magnetic resonance imaging or fMRI to understand what's going on in the brain.

LuAnn Heinen:

What do we need to do as a society to stop this, to right the course a little bit?

Dr. Sara Gorman:

It's not an easy question to answer, and there are a lot of things, there are a lot of sort of small solutions that can be done, but there are solutions that need to happen on the policy level. We need to figure out, for

example, as a basic thing where people don't have good access to good information. There are media deserts or places in the country where people don't have good access to the correct information, partially because it's paywalled, partially because there's no local newsroom there, partially because they don't have broadband access. Actually, thinking about access to information as a basic human right, the way access to health care is, will be very helpful to try to actually get people in a place where they can be exposed to more solid information. Another thing that I think does need to happen, although it's very hard politically, is there needs to be more regulation of social media companies.

There was a study recently that found that some of the moderation Facebook did during the last election actually did nothing. So they really need to be guided by people who are studying misinformation about what really works to keep that misinformation from spreading so easily. They all need to probably look at their algorithms and see whether their algorithms might actually be promoting misinformation because there's reason to believe that they are. There's another systemic thing here that's specific to health care, which is that doctors need more time to counsel patients about health care decisions, using techniques like motivational interviewing, which is the sort of behavior change technique. Then there are others as well, but they take time. So there needs to be space in our health care system for those kinds of conversations.

LuAnn Heinen:

Shout out to your work with Critica, the organization you founded, because you're not just talking about this, you're actually working to counteract scientific misinformation on the internet and I know there's a big focus on social media communications. Anything else you want to say about Critica's work?

Dr. Sara Gorman:

We are a general science communication organization. We are working with corporations as well as health departments to help shape their messaging around vaccine campaigns and also to teach employees, for example, about misinformation and information hygiene. We also do an intervention on social media. We train people to sort of surveil social media and find out where there's really consequential misinformation happening. Our previous project was focused on Covid-19 vaccines. Now we're focused on reproductive health misinformation and they surveil the internet and they intervene with an intervention that we created that is based on motivational interviewing. We're now doing a big study to further measure the results of this kind of interaction on what people believe.

LuAnn Heinen:

Can you just briefly explain what infodemiology means?

Dr. Sara Gorman:

Sure. The actual term itself is a combination of information and epidemiology. So when there's an outbreak of an infectious disease, epidemiologists survey what's going on, and they try to figure out where is this coming from and really importantly how it's spreading. Then they respond by really going to the nodes of the spreading and helping to reform and change and be able to contain the infection at that point. So infodemiologists do something very similar with information. They find out where there's misinformation, where it's coming from, how it's spreading, and then they try to intervene at the points where this is happening most influentially so that they can go to the influencer or whoever's at the center of this misinformation spreading and really be able to, there are different methods, but be able to kind of stop the spread of misinformation at that point.

LuAnn Heinen:

So important and so timely. Let's talk about the timeline for a minute. In 2018, you picked up the term infodemiology. In 2016, you first published, *Denying to the Grave: Why We Ignore the Facts That Will Save Us*. I know it was updated in 2021, but in 2016, what led you to do that? That was way pre-Covid.

Dr. Sara Gorman:

Yes, I was kind of early to the party in this field, surprisingly. I had no idea. I really started working in this field 10 years ago in 2013. At the time I had no idea that it was going to become what it's become, which is a huge field with tons of scholars working in it and government attention and just really all over the place. At the time I became very interested in the anti-vaccine movement. I just was very fascinated with why and how is this happening. The thing that struck me the most was the fact that I would see things written about anti-vaxxers that would say, oh, they just need to be educated. But then in sort of the profile of who was believing these anti-vax ideas, they were very well-educated people, it wasn't what you would expect and they had access to good information. What I realized was that there must be something else going on here and so that was where the idea for *Denying to the Grave* was born, because I wanted to really look at the psychological and social underpinnings of why people believe things about science that aren't true.

LuAnn Heinen:

It's really terrific. What a terrific body of work and so important right now. Tell me what your PhD is in.

Dr. Sara Gorman:

My PhD is actually in English literature. I started working in the last two years of my PhD writing my dissertation. I started working in the public health field at the Harvard School of Public Health in the epidemiology department and I started working on this book. Then I did subsequently do a public health degree after that and have spent the last 10 years working in a variety of capacities doing health care work, program evaluation, but really coming to focus more and more on the work that Critica does around science and health communication.

LuAnn Heinen:

Tell us about your co-author for the first book.

Dr. Sara Gorman:

My co-author on my first book was Jack Gorman, who is actually my father. He had a long career, he's mostly retired now, but he had a long career in psychiatry and neuroscience. I really wanted there to be an element here about neuroscience, because I wanted to see if there was anything doing in that world about studying why people believe things that aren't true. We did find some really interesting papers and he obviously was better at interpreting those than I was, but we also ended up because we got so interested in the motivational interviewing concept, it was great. It's always been great to have his input because he spent decades as a psychiatrist and that is a form of therapy that comes from the psychology and psychiatry world. He's been amazingly helpful in sort of guiding some of our work on that.

LuAnn Heinen:

What a great collaboration. Tell us what you're onto next. I understand that you're about to take on a new responsibility beyond Critica.

Dr. Sara Gorman:

Yes, I'm about to start as the executive director of an organization called, Those Nerdy Girls. It was founded during the pandemic and it used to be called Dear Pandemic. It's basically a science communication platform that's led by all-female scientists and was born out of the realization by a few of these scientists who founded it, that people, their family, their friends, their colleagues, had a lot of questions about Covid and there wasn't anyone coming back quickly enough with answers. So they founded Dear Pandemic, they posted twice a day and they had millions of questions coming in and they grew their following to hundreds of thousands on some social media platforms. Then as the pandemic recedes a bit, we've shifted focus a little bit to other areas of health and changing the name to Those Nerdy Girls. I'll be taking the helm in October. I also just finished writing a new book that's about the trust issues in the health care system, primarily, and that will come out from Oxford University Press next summer.

LuAnn Heinen:

If people want to look up Those Nerdy Girls, what platform should they use?

Dr. Sara Gorman:

You can search for us on Facebook, or we also have a website, <https://thosenerdygirls.org/>.

LuAnn Heinen:

Sara, thank you so much for your time today. This was terrific and really elucidating.

Dr. Sara Gorman:

My pleasure. Thank you for having me.

LuAnn Heinen:

I've been speaking with Dr. Sarah Gorman, CEO and co-founder of Critica, about the psychology of health care decision-making. Her book, *Denying to the Grave: Why We Ignore the Facts That Will Save Us*, is available now. Her second book, *The Anatomy of Deception: Conspiracy Theories, Distrust, and Public Health in America*, will appear in early 2024.

I'm LuAnn Heinen and this podcast is produced by Business Group on Health, with Connected Social Media. If you like the conversation, please rate us and leave a review.