

WHAT'S THE HARM IN EMBRACING PSEUDOSCIENCE?

BY JONATHAN JARRY



When I'm interviewed by journalists on the topic of pseudoscience, I am inevitably asked some version of the question, "but what's the harm?" The journalist here is doing their job in getting me to communicate to the public that this non-sensical intervention is not without risk. But many people not particularly interested in whatever bit of pseudoscience I am criticizing will lob the same question at me in a rhetorical manner. "If people want to try it", I will essentially be told, "they're free to do so. Why should you care?"

While freedom of choice should be defended, these choices need to be well informed. When they are contaminated by misinformation, it's the consumer who ends up paying the price. Combatting pseudoscience thus has a strong consumer protection angle. There are people out there, either deluded or manipulative, ready to sell the masses on game-changing technology, ancestral knowledge, and cure-alls based on little more than powerful testimonials and cherry-picked data. And this pseudoscience is never harmless.

PSEUDOSCIENCE HARMS YOUR WALLET

Fifteen years ago, I consulted a chiropractor. I was under the impression back then that a chiropractor was a medical doctor who had specialized in back care. That is not the case [1]. Suffice to say that none of the sessions I had were free. I had to pay for the initial X-ray, which inevitably revealed a "chiropractic subluxation" (a fictional change in your spine that actual radiologists can't see... because it's not there); I had to pay for the frequent acute care sessions I was told I needed; and I then had to pay some more for "maintenance" sessions. We wouldn't want that spine to get back out of alignment, would we? It turns out that the mild, temporary benefit I was gaining from these sessions was entirely due to the pre-back-cracking portion of the intervention when I was laying down with a hot compress around the painful area. When the chiropractor personally called me to know why I hadn't booked a new

appointment, I told her I could do the laying down and the heat at home for free. She was not happy.

Because the idea of wellness is particularly trendy these days, an impressive industry has been built to offer products, services, books, apps, and interventions to allegedly make you happier and healthier. Hollywood actress Gwyneth Paltrow is now infamous for starting a wellness brand called "goop" and selling porous vaginal jade eggs under the pretense of aspirational living and female empowerment. These eggs and their pseudoscientific siblings (a medicine bag full of rocks, crystals in water bottles, books written by a guy who claims to be receiving medical information from a supernatural spirit from the future), they cost money.

There are even more insidious ways of losing money on unproven wellness gimmicks. Some essential oil companies function as multi-level marketing operations. They recruit people to buy their product, sell it, and recruit more people under them, who will themselves recruit more people. While promises of lavish lifestyles are flaunted quite liberally, it turns out that 92% of the sales force for one such essential oil company, Young Living, makes on average \$1 a month [2]. But because they have to buy the products they are selling, and because there only so many potential customers out there, they all lose on average a little over \$1,000 [2].

The wellness industry alone is worth 4.5 trillion dollars [3]. Someone has to pick up the tab.

PSEUDOSCIENCE HARMS YOUR PHYSICAL HEALTH (AND CAN SOMETIMES KILL YOU)

Makayla Sault was 11 years old when she died. She had a type of cancer known as acute lymphoblastic leukemia, and her chances of survival were estimated at 72-75%... with chemotherapy. But the treatment was putting a strain on her body, and a naturopath by the name of Brian Clement, who operates a pseudoscientific health resort in Florida, came to talk to her community in Ontario about the evils of medicine and why they should instead embrace a raw vegan diet to cure cancer. So Makayla stopped chemotherapy and her parents paid thousands of dollars to fly to Florida to receive these alternative "treatments". She eventually died of a stroke a few months later [4].

SUMMARY

Pseudoscience can appear harmless to the casual observer, but it tends to harm the people who buy into it both financially and physically.

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Vulnerable people dealing with acute and chronic illnesses make for ideal prey. Turning to tempting, unproven and often disproven pseudoscientific “remedies” often means delaying proper medical treatment, which has real consequences on our health. Even when the modality is termed “complementary” (meaning that it’s meant to accompany proper medical treatment and not replace it), there is some evidence (in a fairly small study so far) that it does lead to delaying medical interventions [5]. How? For example, a patient may decide to get surgery for their cancer and complement it with a pseudoscientific intervention, but *also* refuse the chemotherapy that is recommended. Thus the pseudomedical intervention would be labelled “complementary” to the surgery, but it is in fact an alternative to chemotherapy. And these patients, on average, tend not to survive as long.

The pseudoscientific interventions themselves can also be responsible for directly harming the body. Ear candles can cause burns and perforations inside the ear [6]. Herbal products have been implicated in heavy metal poisoning and kidney and liver damage due to adulteration and accidental contamination [7]. And the swift neck rotations performed by chiropractors have been associated with a number of cases of physical injury, mostly through the tearing of an important blood vessel in the neck which can be lethal [8,9].

There has also been a clear worldwide rise in parents declining vaccination for their children or choosing an “alternative vaccination schedule” that is not evidence based, and this growing movement is fed in large part by the pseudoscience of anti-vaxxers, who have found kinship with alternative health practitioners such as homeopaths and chiropractors [10-12].

Falsehoods such as “the measles-mumps-rubella vaccine has been linked to autism” and “children are receiving too many vaccines, too soon” spread like uncontrollable fires on social media and give a legitimate-looking anchor to the fears of new parents. For these reasons, vaccine hesitancy was named one of ten threats to global health in 2019 by the World Health Organization [13].

Even innocuous-looking pseudosciences like homeopathy — essentially the sale of sugar pills to treat any condition — carry risks to physical health. Many homeopaths have embraced an alternative to vaccines called “nosodes” in which diseased tissue, blood, feces, urine, or a respiratory discharge is diluted theoretically out of existence and sold as an all-natural immune booster. Embracing these preparations leaves children vulnerable to acute infections like mumps, rubella, and whooping cough.

THERE IS VALUE IN TRUTH

Believing in pseudoscience can be clearly harmful to you in very practical ways, but there’s also a more philosophical reason for wanting a bit of light in the darkness: there is great value in believing true things. The universe does not care about your beliefs and opinions. It simply exists according to rules that we can begin to understand using the tools of science. I found it personally enriching to walk out of the darkness of intuition and supernatural thinking and to find the guiding light of science to show me the wonders of our world. The more we understand the universe, the better prepared we will be for its quirks. We are free to believe whatever we want, of course, but at the end of the day, if we think sugar pills and mystical energy transfers will save us, the universe will still kick us in the rear.

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