

An approach to critical thinking for health care professionals

The historic chiropractic approach to immunizations is used to illustrate a systematic method to address any claim through the six tenets of evidential reasoning: falsifiability, logic, comprehensiveness, honesty, replicability, and sufficiency.

Shalinder Arneja, MD, MHSc

ABSTRACT: Most physicians practise evidence-based medicine; however, the longstanding philosophies of complementary and alternative medicine (CAM) are prevalent in society today. The scientific basis for these treatments is generally not evidence based. Typically, the treatments are based on faith and philosophy. Since these treatments are becoming more accepted by patients, it is the responsibility of all physicians to look at the claims made by the CAM specialists and share these findings with the public. An appropriate method to systematically address any claim is through the use of the six tenets of evidential reasoning: falsifiability, logic, comprehensiveness, honesty, replicability, and sufficiency (FiLCHeRS). The historic chiropractic approach to immunizations is used to illustrate the FiLCHeRS methodology.

Evidential reasoning

FiLCHeRS is an acronym that refers to the six tenets in evidential reasoning: falsifiability, logic, comprehensiveness, honesty, replicability, and sufficiency. FiLCHeRS, popularized by James Lett,¹ is a systematic method for epidemiologists, critical thinkers, and medical professionals to evaluate any claim. In this discussion, the

historical chiropractic approach to immunizations will be discussed and used to illustrate the FiLCHeRS methodology.

History of chiropractic

The founding father of chiropractic treatment is Daniel David Palmer. Palmer was born in 1845 in Port Perry, Ontario. He died in 1913 at the age of 68, succumbing to typhoid. At the age of 20, he moved to the United States with his family. He was a scientific philosopher with interests in the leading health philosophies of the time, including magnetic healing, osteopathy, and spiritual healing, with magnetic healing as his primary treatment methodology.

Palmer began practising chiropractic medicine based on his pinched garden hose theory, which promotes the theory that spinal subluxations cause nerves to be pinched. Subluxations, the theory states, cause disruptions in nerve conduction to the target tissues (major organs, arteries, skin, etc.), causing end-organ dysfunction and disease. Furthermore, his philosophy states that living things have what he termed *innate intelligence*, or a spiritual healing force that can self heal; therefore, if one can improve nerve conduction that is being altered by the subluxations, innate intelligence can cure disease.

Palmer founded the Palmer School

of Chiropractic in 1897 in Davenport, Iowa, and his work and theories were adopted by his son, Bartlett Joshua (BJ) Palmer.

History of chiropractic view on immunizations

The debate between the chiropractic establishment and medical science on the issue of immunizations became prominent with the discovery and development of the polio vaccine. Public health initiatives strongly supported the vaccination programs. At that time, the International Chiropractors Association and the chiropractic establishment staunchly opposed the vaccination program.^{2,3} Their position stated that the immunization campaign against polio was failing, that the incidence of disease was increasing in the vaccinated population, and that chiropractic treatment was the only cure and prevention for polio.

One can look to the philosophy inherent to chiropractic treatment as the rationale for the staunch opposition to immunizations. The innate intelligence theory states that living

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Dr Arneja is a resident in the Department of Orthopaedic Surgery at the University of British Columbia. He has a master of health science degree (Epidemiology) from the University of British Columbia Department of Healthcare and Epidemiology.

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things have an innate way to heal with their own host defences. That is, the innate immunity can prevent and cure infectious diseases, and any form of artificial immunity or treatments will not work. If disease ensues, it is explained by the pinched garden hose theory, which states that subluxations are causing nerve dysfunction. Thus, treatment of infection or any disease lies with unpinching the nerves and allowing one's innate intelligence to heal oneself.

Discussion

The chiropractic position toward immunizations is well known and widespread in society. It is the responsibility of critical thinkers and public health officials to examine the claims and the evidence for the claims, and to educate society as to the validity of the claims. Indeed, this is a critically important public health issue that affects the entire population. In this discussion, the six tenets of FiLCHeRS will be used to evaluate the chiropractic view on immunizations.

Falsifiability

The falsifiability tenant states that it must be possible to conceive of evidence that proves the claim false such that if a claim *is* false, the evidence will prove that it is false; conversely, if the claim is true, the evidence will not disprove the claim.¹ It is conceivable that one *could* design a randomized clinical trial to establish whether chiropractic care in comparison with standard vaccination regimens is a prevention or treatment for infectious diseases. This trial does not exist; furthermore, it would be an unethical trial to conduct as one could not ethically enroll patients in a trial with the goal of answering this question based on the observational data gathered over the 20th century supporting vaccinations as health policy.

The chiropractic claim regarding immunizations is that living beings

have an innate intelligence that cures and prevents diseases. This is a non-falsifiable argument. It is a belief system, a philosophy. There is no method to disprove or prove this claim. For example, if an individual suffers from tuberculosis, and she is cured after taking the four-drug regimen, the chiropractic view would be that the patient's innate intelligence was the cause of the cure and not any drug that was given.

Another way to show that this view is non-falsifiable is that the chiropractic establishment uses the "multiple outs" approach to argue the utility (or lack thereof) of vaccinations. Essentially, there are series of excuses that the chiropractic establishment has created to explain away the evidence that exists to falsify the claim. Campbell and colleagues summarized the excuses⁴ used to explain why immunizations do not work:

- Cyclical patterns of disease exist.
- Reduction in disease incidence is attributable to improved standards of living and environment.
- Disease outbreaks still occur in fully vaccinated communities.
- Adverse events occur with vaccines and vaccines can cause the disease they are intended to prevent.

Logic

According to Lett, "an argument is said to be valid if its conclusion follows unavoidably from its premises; it is sound if it is valid and if all the premises are true."¹ The chiropractic logic argument with respect to immunizations can be summarized in the **Figure**. This argument can be proved unsound if one immune individual does not have a subluxed spine. It can be proved invalid if one patient who develops immunity to the disease did not have a subluxed spine or if there was no spinal manipulation (infection, passive immunity, etc.). The argument in the **Figure** seems absurd. It would be simple to design a randomized trial to test this logic argument, albeit un-

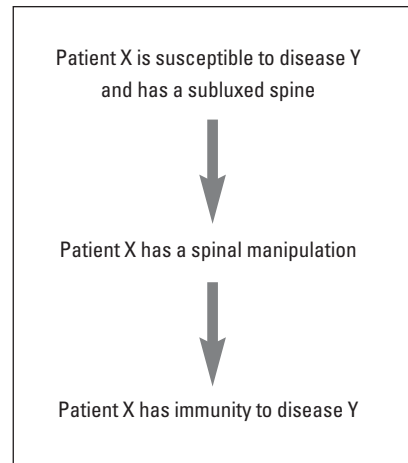


Figure. Chiropractic logic argument with respect to immunizations.

ethical. The chiropractic claim regarding immunizations fails the logic argument tenet of FiLCHeRS.

Comprehensiveness

With respect to comprehensiveness, Lett states that "the evidence offered in support of any claim must be exhaustive—that is, all of the available evidence must be considered."¹ A review of the literature, including EM-BASE, MEDLINE, and the Cochrane Database of Systematic Reviews, shows there are no trials or observational studies that addressed the chiropractic claims on immunizations. There is no published evidence to support the chiropractic position on immunizations. Furthermore, the overwhelming scientific evidence that does exist in support of immunization seems to not be considered by the chiropractic establishment that denounces immunizations. Finally, they disregard the benefit of immunizations by explaining away the decreased incidence of many diseases with reasons such as the cyclical nature of disease states. Consequently, the chiropractic claim regarding immunizations fails the test of comprehensiveness.

Honesty

Lett asserts that "the evidence offered in support of any claim must be eval-

uated without self-deception.”¹¹ The chiropractic view on immunization is steadfast, based on testimony, and neglects to consider the evidence that exists in support of vaccinations; therefore, the chiropractic approach to immunizations does not fulfill this tenet of FiLCHeRS.

Many chiropractors currently support immunizations. The Canadian Chiropractic Association⁵ should be commended as they recognize the health benefit of immunizations; however the larger chiropractic^{6,7} associations—the International Chiropractic Association and the American Chiropractic Association—have not.

Replicability

With respect to replicability, Lett’s definition suggests that “if the evidence for any claim is based upon experimental result, or if the evidence offered in support of any claim could logically be explained as coincidental, then it is necessary for the evidence to be repeated in subsequent experiments or trials.”¹¹ A thorough review of the literature, including exhaustive searches of EMBASE, MEDLINE, and the Cochrane Database, reveals that there are neither observational studies nor any randomized clinical trials published with the attempt to address the claim that chiropractic manipulation affects the prevention or treatment of infectious diseases. The claim therefore fails the test of replicability.

Sufficiency

Finally, in terms of sufficiency, Lett suggests that “the evidence offered in support of any claim must be adequate to establish the truth of that claim.”¹¹ The results of an exhaustive EMBASE, MEDLINE, and the Cochrane Database search identified 17 studies with the following medical subject heading search terms: immunizations, chiropractic, and spinal manipulation. All of these published articles are testimonials, surveys, narrative reviews,

or historical reviews. With respect to this claim, the burden of proof remains unfulfilled; there are no experimental or observational studies and the only evidence available is based upon authority or testimony, which is inadequate for any claim. As such, this claim fails the test of sufficiency.

Conclusion

Using the FiLCHeRS tenets of evidential reasoning, one must conclude that the chiropractic position regarding immunizations is based on testimonial, philosophy, opinion, and dogma rather than evidence. The claim that chiropractic care is superior to immunizations is not substantiated when analyzed using the FiLCHeRS approach to critical thinking.

References

1. Lett J. A field guide to critical thinking. *Skeptical Inquirer Magazine*. Winter 1990. www.csicop.org/si/9012/critical-thinking.html (accessed 25 October 2007).
2. Keating JC Jr, Hanson DT. Quackery vs. accountability in the marketing of chiropractic. *J Manipulative Physiol Ther* 1992; 15:459-479.
3. Palmer BJ. *The Philosophy of Chiropractic*. V. Davenport, IA: Palmer School of Chiropractic; 1909.
4. Campbell JB, Busse JW, Injeyan HS. Chiropractors and vaccination: A historical perspective. *Pediatrics* 2000;105:e43.
5. Canadian Chiropractic Association. www.ccachiro.org/client/cca/cca.nsf/web/A8F79DD6BAE2A49385256DCD005AD41C?OpenDocument (accessed 16 September 2007).
6. American Chiropractic Association. www.acatoday.com/level2_css.cfm?T11D=10&T2ID=117#90 (accessed 16 September 2007).
7. International Chiropractic Association. www.icapediatrics.com/reference-articles.php#Vaccination (accessed 16 September 2007).

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