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The Collision between Science, Politics, and the Public Concern about the Effects of Salt

Doctors have recommended to patients that they should cut down on their sodium consumption to reduce the risks of cardiovascular diseases. In fact, government agencies like the Food and Drug Administration (FDA) are pushing policy so that Americans reduce sodium in their diets. The FDA has put pressure on restaurants and corporations to limit the amount of salt in foods. This public health recommendation of decreasing salt in the population's diet has been normal wisdom for decades. Recently, scientists have found associative evidence in epidemiology that goes against this common correlation between high sodium and heart disease.

A crucial way to look at this controversial issue in the United States is that the government heavily depends upon scientists to reassure the public of the nation's health in a scientific system that continuously evolves, that lacks communication with the non-scientific world, and that produces conflicting data. Gary Taubes points out in his *Science* magazine article, "The (Political) Science of Salt," that the core of this controversy is the "clash between the requirements of public health policy and the requirements of good science, between the need to act and the institutionalized skepticism required to develop a body of reliable knowledge" (Taubes). Thus, the debate over the effects of salt is a relevant issue in science, and it is a controversial topic that matters to the public because it illustrates how the constant push for public health recommendations and policies conflicts with the inevitable uncertainty of science, the skepticism of epidemiological studies, and the continual demand for producing reliable scientific results.

A critical approach to make sense of this salt dispute is to look at the inadequacy of the design of the studies. Since the salt studies are epidemiological, the corollaries drawn between salt intake and heart disease can only be associative and not causative. There is no way to control for confounding variables like wealth, education, or economic status when performing

observational studies on humans. In fact, Andreas Von Bubnoff asserts in his *Los Angeles Times* article, "Numbers Can Lie," that "a scientific approach used in many human studies often leads to findings that are flat-out wrong" (Von Bubnoff). Accordingly, the problem is that epidemiology considers so many factors at once, and therefore, it is only possible to make correlations from epidemiological studies because it is highly unlikely to single out one single factor as causation. This is an important idea because the public puts trust into numerous scientific findings published in journals and in the press, but people still remain skeptical of the science being produced from these salt effect studies performed on humans. Gary Taubes in his *New York Times* article, "Do We Really Know What Makes Us Healthy," argues that "observational studies can only provide what researchers call hypothesis-generating evidence" (Taubes). It is crucial to note from Taubes that since these studies are based on observation of human behavior, they act more as predictions for scientists to test the results in the future because randomized clinical trials are difficult to organize now.

However, there is a lingering risk of forming predictions from epidemiological studies because these predictions make good stories for the news media, and the media are prone to report these stories as causation rather than association to the general public. These stories can have negative consequences because more and more health recommendations based on observational and ambiguous evidence are being pitched to the public. Von Bubnoff emphasizes that these recommendations "can be influential. Often, in response to them, members of the public will go out and dose themselves with this vitamin or that foodstuff" (Von Bubnoff). Von Bubnoff illustrates an intriguing idea and that these studies are a public concern because the public and the media are susceptible to interpret the results as causation because there is not much interaction between the scientists and the public.

Without an appropriate science transfer of information to the public, epidemiological studies, despite their limitations and uncertainty, are perilously being accepted as truth by the public. Hence, "the public can be harmed following advice based on poor evidence or poor interpretation of good evidence" (Salt Institute). This is a very good point because on one side of the debate, the government creates anti-salt campaigns based on poor evidence and ambiguous science. At the same time, the public, the media, and the government are hazardously drawing conclusions from epidemiological studies that produce results, which will most likely be overturned by future clinical trials. The salt debate takes an interesting glance at how government policy based on these inadequate studies can influence people to change their lifestyles and diets when in reality, there is no current reliable scientific knowledge that can tell people what is healthy and what is not healthy.

With this unavoidable uncertainty in epidemiology, the salt debate is negatively influencing the relationship between the public and the scientific community. Melinda Moyer argues in her *Scientific American* article, "It's Time to End the War on Salt," that "a great number of promises are being made to the public with regard to this enormous benefit and lives saved. But it is based on wild extrapolations" (Moyer). Moyer adds a stimulating perspective that helps dissect this debate because when scientists place their results in medical journals to be accessed by the non-scientific world, the public puts trust in the scientists that the results are reliable and represent good science. Lay people who read contradictory health findings will start to lose trust in what the expert scientists are saying. This trust is important to maintain because scientific findings often lead to policymaking and recommendations that will influence lifestyle, but increasingly, scientists find it a challenge to find reliable results from studies that try to measure lifestyle. Trust is another significant way to look at the salt effects controversy because

it puts into question how reliable scientific findings should be before they are published and how much communication there needs to be between scientists and the general public. With little trust between scientists and the government, policymakers form policies that minimize the scientific results. When the government forms skeptical policies, individuals may alter their diets because they believe they are acting upon scientific recommendations based on reliable studies.

Science will always have uncertainty, especially in the field of epidemiology. The public agrees that there is this uncertainty in science because "science advances using a time-honored discipline that subjects our current understanding of the world around us to rigorous testing which refines that understanding and generates new hypotheses to be tested" (Salt Institute). However, there has always been difficulty of producing objective science. The scientific world and observations are not flawed or wrong, but rather, its method and tools based on observation and association is set up in a way such that truth is hard to find. As a result, Sheila Jasanoff reports in her *Nature* magazine article, "Technologies of humility," that policymakers "need disciplined methods to accommodate the partiality of scientific knowledge and to act under irredeemable uncertainty" (Jasanoff). Jasanoff's argument illustrates that policymakers have to decide when and how act on complex issues like sodium consumption, but these issues still cannot be fully explained with scientific knowledge alone. Policy cannot solely be defined from scientific truth. Since science will never achieve full certainty, the salt controversy becomes a matter of how dependent society should be on the scientific world to relieve health problems.

Consequently, there is a conflict when the government and experts propose recommendations for an issue that causes a concern as to what defines good science. Michael Fenster, a cardiologist, states in his *Atlantic* journal article, "Don't Hold the Salt," that "good science is not about crusading with preconceived ideas. It's about asking why, and seeking the

truth, however inconvenient it might be. Public health policy needs to be based on firm scientific foundation and clear benefit, not populist propaganda" (Fenster). This is a perspective to pay attention to in this debate because epidemiological evidence may foresee clear benefits for a small group of people in the short term, but it will not always predict the smallest of unintended consequences for the United States population in the long run.

So, there is a need for good science in this salt issue, but a public concern is that there may not be time to produce good science and a large, randomized clinical trial. Gary Taubes mentions in his article, "The (Political) Science of Salt," that many physicians and administrators "have an obligation to push for universal salt reduction because people are dying and will continue to die if they wait for further research to bring scientific certainty" (Taubes). Taubes' argument portrays how the pressure for health recommendations clashes with the uncertainty of science and the desire for good science. If the public waits for undisputable information from the science community, the government will be able to make more conclusive recommendations based on scientific truth, and hence, there would be no debate in the first place. Although, in reality, the search for irrefutable truth in contemporary science usually takes place over long periods of time that scientists cannot control. Meanwhile, there is a serious public concern that the United States' health is at stake right now.

A randomized trial is an easy solution to this debate, yet this type of study is expensive, somewhat unethical, and it takes time. Plus, life and death are at stake for a minority of Americans if they have to wait for scientists to produce reliable data. Von Bubnoff complements this idea with his argument that "epidemiologists warn that discarding results because of a correction for multiple testing may risk missing true and important effects" (Von Bubnoff). Von Bubnoff's claim brings a thought-provoking outlook to the core of the salt dispute because it

shows that this issue will not come to an easy conclusion. There are people like Michael Fenster who have a desire to find scientific truth before creating policy, but then, there are epidemiologists who suggest that now is the time for policymakers to act, even with the uncertainty of scientific data today.

On one side of the debate, there is a push for science. Meanwhile, there is heavy pressure put on public policy. Policy experts advocate people to consume less salt because experts have an obligation to work on behalf of the public interest to create the most good for the most people. The controversy is that the public wants the information now, and they want the simple answers from science. The public does not want to wait for a clinical study that can last four or five years, so the government is pressured by public interest and opinion to create policy that cannot be completely verified by science. In the end, this debate leaves society with one question: Should this issue over the effects of salt be driven by science or is it merely a matter of public opinion? Perhaps, the best solution depends on how science and politics work together in an uncertain, problem-filled world that is developing more rapidly than ever before.

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