

Editor's note: VOICES is a project of the journal to provide personal, historical, and scientific perspectives on the field of epidemiology, as seen through the eyes of the field's most senior and accomplished practitioners. Readers are welcome to nominate candidates for the editors' consideration.

A Conversation with Dimitrios Trichopoulos

Michelle A. Williams

Dimitrios Trichopoulos was born in Volos, Greece on 9 December 1938. He is Professor of Cancer Prevention and Professor of Epidemiology at the Harvard School of Public Health. He is also a Member of the Athens Academy and President of the Hellenic Health Foundation, Greece. Dr. Trichopoulos has served as Director of the Harvard Center for Cancer Prevention; Chairman of the Epidemiology Departments at the University of Athens Medical School and the Harvard School of Public Health; and Adjunct Professor of Medical Epidemiology at the Karolinska Institute in Sweden. His publications include the first study linking passive smoking to lung cancer, early influential work linking hepatitis B and C and tobacco smoking with hepatocellular carcinoma, and key studies on intra-uterine exposures in relation to breast cancer risk. His paper linking acute psychological stress with cardiac deaths was listed by the Editor of the *Lancet* (1997) as 1 of 27 papers deserving to form a Canon for Reading Medicine from antiquity to now. For his work, Dr. Trichopoulos has received awards and distinctions including honorary doctorates, the Brinker International Award for Breast Cancer Clinical Research, the Julius Richmond Award, and the Medal of Honor of the International Agency for Research on Cancer, World Health Organization.

INTERVIEW

MW: Few people start with the intent of becoming an epidemiologist. Can you describe your own path that brought you to the discipline?

DT: I am a physician and I was doing my residency in internal medicine at the Alexandra Hospital in Athens, Greece, with a view toward becoming a neurologist or a psychiatrist. I happened to meet Brian MacMahon, who came to Greece while working on his now-classic, seven-country international study on breast cancer. We somehow developed a connection. He thought that I was promising as an epidemiologist and I admired him for his intellect, his knowledge, and his integrity. I started a master's degree program in 1967 and graduated in 1968. This was a critical step that shifted me from clinical medicine to epidemiology.

MW: Who has had the strongest influence in your career?

DT: It's difficult to say. My career is almost 50 years long and there have been many people who have influenced me. Undoubtedly, Brian MacMahon was the dominant figure. Early in my career, with a background in internal medicine and microbiology and only my master's degree as formal training in epidemiology, I also learned a lot from interactions with my students. Several of them were more educated and more insightful than me, and it has given me enormous pleasure to follow their accomplishments in epidemiology since the 1970s.

This interview was conducted on 26 April 2013. Dimitrios Trichopoulos has approved the transcript for publication.

Correspondence: Harvard School of Public Health, Department of Epidemiology, 677 Huntington Avenue, Kresge Bldg, Rm 905, Boston, MA 02115. E-mail: mawilliams@hsph.harvard.edu

 Dimitrios Trichopoulos' curriculum vitae is available with the online version of the article at <http://links.lww.com/EDE/A827>.

Copyright © 2014 by Lippincott Williams & Wilkins

ISSN: 1044-3983/14/2505-0765

DOI:10.1097/EDE.0000000000000149

MW: Collaboration is essential to successful epidemiologic studies. What have you found to be the most important ingredients of a good collaboration, and with whom have you had your best collaborative efforts?

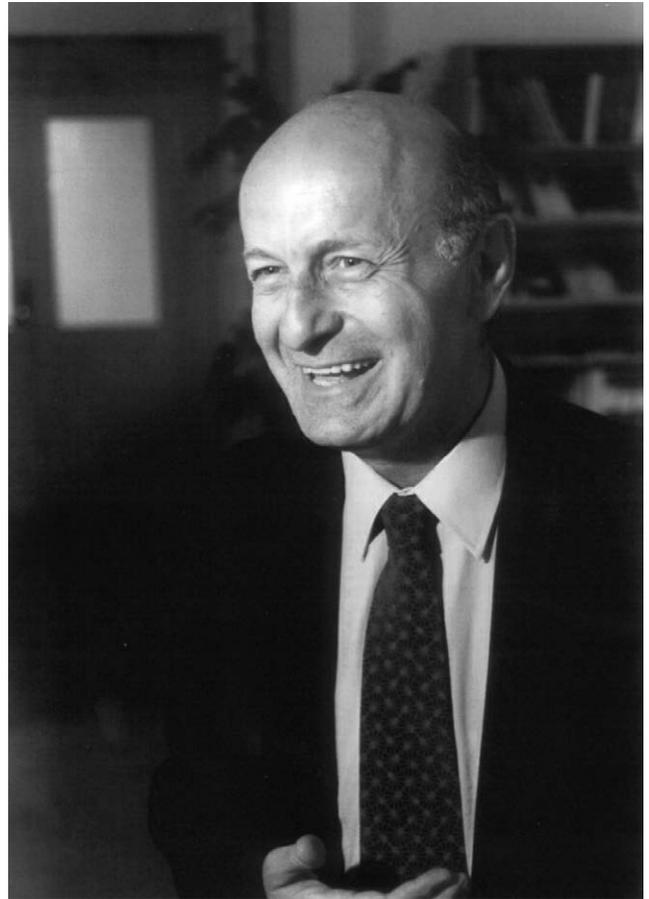
DT: You are so perfectly right. Indeed, if there is a field in which collaboration is more essential than in other fields, this is epidemiology. Over almost 50 years, I have worked with many people. Chung-Cheng Hsieh, now professor at the University of Massachusetts and in our department at Harvard, has been a lifelong teacher for me, notwithstanding the fact that he is much younger. Hans-Olov Adami, a lifelong friend with leadership expertise, introduced me to several talented colleagues, notably Anders Ekblom, with whom I have had the good fortune to interact. And, of course, my wife, Dr Antonia Trichopoulos, who isn't really appreciative of numbers, but has insights, organizational talents and stubbornness—she was convinced several decades ago about the health effects of the Mediterranean diet and pioneered important studies that contributed to the documentation of this. Pagona Lagiou, who started as a very young student and is now an accomplished leader in the field, has been a valuable partner. I think these are the people with whom I have had, and continue to have after all these years, long, intellectually stimulating and fun collaborations. Successful collaborations are built and sustained on the principles of integrity, transparency, and some inherent kindness we should all encourage and which I consider a tangible and incredibly important ingredient for sustained collaborations.

MW: Who would you regard as the 2 or 3 most important epidemiologists during your lifetime?

DT: This is difficult to say. I have worked for most of my professional life at the Harvard School of Public Health, so I can't claim to identify people with utter objectivity. I believe Brian MacMahon was a leader. He was at the same level as Sir Richard Doll. The world of epidemiology is poorer without them both. Maybe we'll speak about the people who are currently with us. You can't really mention distinguished epidemiologists without referring to Walter Willett, Meir Stampfer, Graham Colditz and David Hunter, and their key contributions. Ken Rothman, together with Olli Miettinen and Alec Walker, are leaders in developing the principles, the core of epidemiology, as distinct from statistical methodology. Ken Rothman and Chung-Cheng Hsieh are also extraordinary communicators. I have appreciated their talents and their patience: it took Chung several times and tons of patience to explain to me why and how the various regression models work.

MW: How have you chosen your research questions over the arc of your career?

DT: This is an area where I'm slightly unusual compared to many distinguished colleagues. Because the country where I spent most of my early years, Greece, did not have substantial resources, we were quite opportunistic. We tried to capture the human experiences under either regular or unusual situations. We used epidemiology to evaluate the benefits of



Dimitrios Trichopoulos, 1989.

traditional exposures, like the Mediterranean diet or to assess the consequences of natural disasters. In the latter context, when there was a major earthquake in Athens, we saw this as an objectively documentable source of massive stress and used it to see whether it is associated with excess cardiac mortality. Some of us also worked on liver cancer, which is common in Greece. In essence, we tried to do what we could actually do. Then, of course, I tried to follow the lead of Brian MacMahon to work intensively on breast cancer.

MW: Which of your many contributions would you most like to be remembered for?

DT: I have made contributions in discovering the major causes of hepatocellular carcinoma (hepatitis B virus, hepatitis C virus, and tobacco smoking). Hepatocellular carcinoma is a very common lethal cancer, particularly in Africa and Southeast Asia. I have looked at the intrauterine roots of breast cancer and perhaps other cancers. This has not captured the enthusiasm of too many people, perhaps because it cannot be easily translated to preventive action, but it did change the perspective.

What I have been more widely recognized for is the documentation of the health effects of passive smoking. There's a story there, Michelle, that I would like to recite just for the

history. We decided to do a study exploiting the fact that most men—but very few women—were smoking in the late '70s in Greece. Housing conditions were poor, with inadequate ventilation. It struck me as an ideal opportunity to study the effects of passive smoking. So, Brian McMahon, colleagues in Athens, and I did the study on passive smoking and lung cancer and sent the paper to a leading medical journal, to have it rejected after revision. They sent a letter recognizing that the implications of our findings were enormous and that they believed we would be proven right, but they were reluctant to publish it, and they accepted that they were “chicken”! We finally published the paper in the *International Journal of Cancer*. This experience was part of my introduction to the policies and politics of publishing.

MW: This research has led to remarkable changes in policy both here in the United States and globally, prohibiting smoking in public spaces.

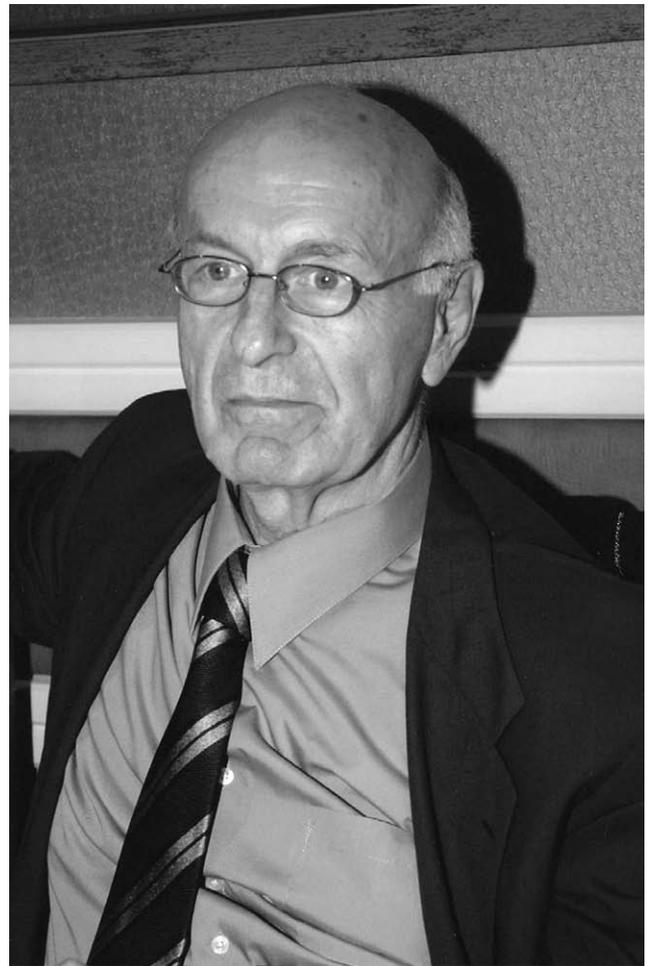
DT: Smoking is an unusual exposure. It causes disproportionate suffering. I feel that we epidemiologists have unwittingly confused the relative importance of various health risks. Tobacco smoking is something unique. I would rank it with poverty as the major risk factors for health. Accumulating evidence over time has led to enormous social and political change regarding smoking. I'm one of the fortunate people because I have been able to see the results of my work and receive recognition for this contribution in my lifetime.

MW: Do you believe that your paper about the risk of passive smoking was one of your most influential papers? Are there others that you would identify as particularly important?

DT: It was the most consequential, because there was opportunity for direct translation to preventive measures. I also value several other papers, like the ones on the early-life origins of breast cancer, and the early papers pointing to the role of hepatitis viruses and tobacco smoking on the risk of hepatocellular carcinoma. But the fact remains that it was local conditions and limited resources in Greece that prompted us to address the specific questions.

MW: I think you underestimate the genius of asking the right question. What do you think is the biggest difference between epidemiology as it was practiced when you started your career, when you discovered epidemiology in the late 1960s, and epidemiology today?

DT: Technology. Technology has changed the setting considerably—and it's going to change it even more. Advances in technology have created new opportunities; however, these can be at a cost to independent thinking. Also, the scale of research has considerably changed and these days multicenter collaborations with data from thousands of participants are quite common. In the past, to have a study that would have a good chance of publication in a decent—let-alone leading—journal, you had to have a group of investigators with insightful leadership focused on the most pressing questions. Today, with the need for huge datasets, an additional condition applies: substantial funding. The financial cost of doing



Dimitrios Trichopoulos, 2014.

independent fieldwork makes anything other than being part of a team that has insightful leadership and is working on important issues prohibitive. We have to be sure that epidemiology skills and principles are applied in all real-life settings, including resource-poor communities, and that technology doesn't erode initiative and independent thinking.

MW: In your opinion, what has been epidemiology's most important contribution to society?

DT: Michelle, let us think about it. It's us, epidemiologists in the last 100 years or so who have documented that environment matters. We have done this ever since John Graunt and William Farr pointed out that the conditions in our lives matter to health. Poverty and poor education cause as many deaths as smoking. Environmental disruptions are influential, whether it's a medication taken during a critical developmental phase of fetal life or an environment-induced metabolic perturbation during the life course. Epidemiology provides the tools for documentation and for establishing priorities.

MW: What is your assessment of the current state of health of epidemiology? From your perspective of 50 years in

epidemiology, what are the biggest risks to our profession, and our ripest opportunities?

DT: Epidemiology is here to stay. It's important. It's critical. It has already expanded to evaluating health care and the performance of treatment and outcomes research. There is a risk that epidemiology is not fully appreciated in the same way as other disciplines. Many people believe they can practice epidemiology just by having the appropriate technology. It is not so. In epidemiology, you may have the tools, the statistical packages, the resources, the data linkage, etc. You still really need the epidemiologist. Epidemiology is not just an expansion of statistics or good training in medicine or biology that you can jump into. It's a discipline with distinct intellectual elements and a core of principles that are essential. The risk is in a lack of understanding of the intellectual depth and principles that shape our discipline.

MW: Do you have any predictions about what the future for our field might hold, recognizing our threats and opportunities, as well our responsibility to more effectively communicate our discipline?

DT: The future of epidemiology is bright. After all, everybody tries to jump into it, either explicitly or implicitly, by doing epidemiological work. Look at the really influential medical journals, the 5 or 6 of them: about one-third of what they report is essentially epidemiological in nature.

MW: Do you think there are sets of questions or problems that academic epidemiologists avoid because they are perceived as the practice of epidemiology and not really within the domain of academic epidemiology? Over the years have you seen this tension?

DT: Yes, but it's being addressed. The leadership, at least in our School, is very receptive to this. Fieldwork is integral to epidemiology; it has always been, as it should be. As for implementation research, which is largely epidemiological in nature, it has gained ground that it lacked in past. Change and adjustment is an ongoing process, and leadership in defining the field is essential.

MW: What is the single most important advice that you would give a new epidemiologist starting their career?

DT: My advice is to believe in the work you are doing, be ready for successes, and more so for failures. Rudyard Kipling advised that we should be able to stand up again after a failure. This is so important. Don't be disappointed because failures are bound to exist. It's a rule of life. The only way to avoid failure is to not do anything, and this is not an acceptable alternative. Whenever I give a presentation, I make sure the audience realizes that the rejections are at least as many as my publications in my long CV (<http://links.lww.com/EDE/A810>). And there's something else. In science, we need to be kind—disagreement in science requires scientific arguments and not personal hostility and rudeness. Occasionally you read reviews, anonymous reviews, and you can't believe that scientists behave that way.

MW: I saved this question for last, although I think I know the answer. What have been your major interests outside of your work in epidemiology?

DT: Very few, Michelle. When I'm working I like to listen to classical music, although I would not go to a concert. I want it as part of my experience of work. I am very interested in international politics. I want to know what's happening in the world I am living in. And I read mysteries, particularly when I travel, which is quite often. Perhaps if people ask me, what is the area other than epidemiology that I have most education in, I will mention mysteries. Mysteries are about solving other kinds of problems but essentially use the same approach as epidemiology and similar techniques—observation, assessment of data, and inference.

ABOUT THE AUTHOR

MICHELLE A. WILLIAMS is the Stephen B. Kay Family Professor of Public Health at the Harvard School of Public Health. She is a reproductive and perinatal epidemiologist who has led pregnancy cohort studies in North and South America. She maintains an interest in the study of the social determinants and molecular epidemiology of preeclampsia, gestational diabetes, placental abruption, and preterm delivery. Williams currently serves as chair of the department Dimitrios Trichopoulos chaired from 1989 to 1996.