



Guest Editorial

A Barrier to Science: Language

For a long time, I have been thinking of what our responsibilities are as scientists in giving everyone an equal chance to produce and access scientific knowledge. In this editorial, I ask questions and search for answers to the questions about the responsibilities of scientists, including in oncology and oncology nursing.

■ A Dilemma: Does Science Serve Society or Scientists?

Science is the producer, proliferator, and implementer of knowledge. Its essential role is to find solutions to social issues and increase prosperity and well-being through the knowledge that it produces. We can propose numerous definitions to express the relationship between science and society, but I favor UNESCO's (United Nations Educational, Scientific and Cultural Organization's) description of the place of science in our lives: "Science is the greatest collective endeavor. It contributes to ensuring a longer and healthier life, monitors our health, provides medicine to cure our diseases, alleviates aches and pains, helps us to provide water for our basic needs—including our food, provides energy, and makes life more fun, including sports, music, entertainment, and the latest communication technology. Last but not least, it nourishes our spirit."¹ If this definition was turned into a slogan, it would be: "Science for the sake of society." However, for science to serve its purpose, there must be a transfer of knowledge. When this transfer is not actualized, science becomes just a barrel of knowledge that only serves the academic objective of who produces the knowledge. The transfer of knowledge is attained through sharing. Thanks to today's technology, each one of us has many optimal and available alternatives to use to share knowledge. On the other hand, we have only one option that will allow us to understand the content of the message between receiver and sender: language. For some, language is the key to the door leading to knowledge, whereas for others, it remains an impenetrable lock.

The language barrier is a multifaceted problem with crucial outcomes in science.² From past to present, English has been accepted as the *lingua franca* of science.^{3,4} It is therefore indisputable that scientists should have a reasonable command of the English language so that they can follow the science. However, the native language of most scientists is not English.³ Presenting a scientific speech and writing a scientific article require many competencies in the native language. Scientists whose native language is not English find themselves overwhelmed by the pressure of producing a work in English within the competing pressure to "publish or perish."

Scientists must use English to share their works in the international arena. Compared with colleagues in similar positions, scientists whose native tongue is not English spend a tremendous amount of time and effort to write academically in another language that they would otherwise spend on science. Many non-English-speaking scientists grow tired, exhausted, and unmotivated along this journey. When they stand side-by-side with their international colleagues at the starting line of science, another difficulty that awaits them is the unequal economic costs of publishing. I believe that all these factors cause inequality among scientists worldwide in the race to disseminate knowledge. I define this as "inequality in the right to write and publish science."

■ When Science Is Inaccessible, Whom Do We Produce It for—Society or the Scientist?

Scientists do not produce science only for themselves. Readers and users find it easier to access and understand an article written in their native language. On the other hand, readers whose native language is English read only English articles and are unaware of scientific results published in other languages. The point to be recognized here is that implementers of study results see only part of the big picture because of the language barrier, whereas others see another part. In other words, the breadth of perspective on the world's health problems and solutions depends on knowledge gathered in one's own language. I define this as "inequality in the right to access scientific knowledge."

To be acknowledged in the international arena, authors send their works to high-impact journals, almost all of which are English publications.^{5,6} This is the phenomenon of publication migration where high-quality articles are published in international journals, which makes these publications more robust and raises their high impact factor. In a sense, publication policies confirm the analyses of Newton, which hold that articles published in journals with high-impact factors receive more citations.⁷ Indeed, in some countries, the pressure of English proficiency and publication policies pose an obstacle to maintaining the high quality of science on a national scale.

■ Is Scientific Knowledge That Is Published the Only True Knowledge?

Scientists publish some of their studies in national journals in their own native languages. Because these local publications are not accessible to international platforms, there is a risk that valuable results may be overlooked. Meneghini and Packer³ argue that in the 1930s, German scientists published in the German language that a causal relationship existed between smoking and lung cancer. They reported that up until the 1960s, when British and US scientists rediscovered this connection, the results of the previous studies had been ignored, and for this reason, smoking cessation programs were negatively affected. Here we have the reality of scientific results whose existence is overlooked. Systematic reviews and meta-analyses are composed of articles published in English. In other words, it is only those articles that had the chance to be published and especially those published in English that enter the pyramid of scientific evidence. Consequently, the truths that we regard as scientific and do not question because of their dependence on a high level of evidence represent only the study results that were able to complete their journey to dissemination in English. Because of the language barrier, these results generally do not include populations that are not sufficiently represented in scientific studies.

■ Where Does Science Stand in the Sphere of International Prosperity and Well-being?

Studies that deal with urgent health problems of a segment of society are not accepted in the journals of countries that have already dealt with and eliminated such problems. As a result, these published studies do not provide solutions for the more immediate problems in the countries of international authors. This lack of benefit for others does not represent the relationship of science to universal prosperity.

Scientific ideas, studies, and results represent the language of science on a national scale and are a part of a nation's culture.⁸ If there is no effort to extract meaning from science on the national level and in

the native language, a country and its culture will not be able to internalize scientific ideas and knowledge intended to serve society. Not being able to use global knowledge because of language barriers makes it difficult for science to benefit its actual user, which is society itself. If we do not find solutions to overcome the language barrier in science, it will be science that suffers. Everyone who produces, reads, and uses science should do their part to this end. If you are a producer of science in one field, you are a consumer in another one—in short, we all need science.

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