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# Basic science disappearing from medical journals, study finds

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A new study by Dr. Warren Lee of St. Michael's Hospital in Toronto has found a steep decline in the number of scholarly papers about basic science published in leading medical journals in the last 20 years. Credit: St. Michael's Hospital

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about basic science published in leading medical journals in the last 20 years.

"This rapid decline in basic science publications is likely to affect physicians' understanding of and interest in the basic mechanisms of disease and treatments," warned Dr. Warren Lee, lead author of the study published in the February issue of the *FASEB Journal*, one of the world's most-cited biology journals.

"If the decline continues, could basic science actually disappear from the pages of specialty medical journals?" asked Dr. Lee, a critical care physician at St. Michael's Hospital and a scientist in its Keenan Research Centre for Biomedical Science.

Basic science is research that examines cells and molecules to better understand the causes and mechanisms of disease. It differs from clinical research, which includes clinical trials of drugs and epidemiological studies that review information from charts and health databases.

Dr. Lee and his team did a search on Pubmed, the main database of medical research, to identify articles on basic science published from 1994 to 2013 in the highest-impact journals in cardiology, endocrinology, gastroenterology, infectious diseases, nephrology, neurology, oncology and pulmonology.

While there was no decline in two of the journals, *Diabetes Care* and the *Journal of the American Society of Nephrology*, in the remaining six journals, the amount of basic science fell by 40 to 60 percent.

In contrast, there was no decline in the number of basic science articles published in three well-known, non-clinical journals dealing with biological sciences, which Dr. Lee also surveyed— the *Journal of Biological Chemistry*, the *Journal of Clinical Investigation* and *Cell*.

Dr. Lee said the reasons for the decline in the coverage of basic science articles by medical journals are unclear, but it may be due in part to the fact that papers about clinical research are cited by other researchers more often. The number of times a paper is cited contributes to a journal's "impact factor," which indicates its relative importance.

He said the fading of basic science from medical journals also parallels the rise of other forms of research by clinicians, such as epidemiology and more recently medical education, quality of care, and ethics.

"The decline of basic science in these journals worries me, because if medical residents and clinicians are never exposed to basic science, they are going to think that it's unimportant or irrelevant," Dr. Lee said. "And it has become a bit of a vicious cycle. If residents think that basic science research is irrelevant, they won't consider pursuing it as part of their training or their career. Ironically, scientific advances mean that we are on the threshold of what has been called "precision" or "personalized medicine", where doctors will be able to understand exactly what is wrong with each patient and tailor the therapy accordingly. But all of that depends on understanding the underlying science behind the disease. Scientific discovery forms the underpinning of medical advances, and clinicians and medical students need to be part of that."

Provided by St. Michael's Hospital

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