



Nutrition research: who funds it and how is it published?

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Nutrition has a fundamental and vital role in contributing to public health. Have you ever wondered how the work of scientists is checked and paid for? Why is some nutrition research behind a paywall? This article describes the ways in which nutrition research can be funded, and explains some aspects related to academic publishing, including the peer-review process and Open Access publishing.

What is peer-review and why is it important?

Before scientists publish their research findings and make them public via academic journals, they usually pass it through a process called peer-review. Peer-review is a form of scientific quality control where scientists open their research to scrutiny by other experts in the field.

Peer review is both a way to make sure that only high-quality, well-conducted studies are made publicly available, and a process by which researchers can improve the quality of their scientific papers by getting feedback from their academic peers. It can also help to identify possible errors or limitations that may have been overlooked while the research was carried out or during the writing of the article.

The peer-review process works like this:

1. Researchers prepare a manuscript describing a study they have carried out including an introduction to the topic, a description of the methodology they used, the results and their interpretation of them. They submit this article to a scientific journal that is relevant to their field.
2. An editor, which is usually a well-known reputed scientist in the field, at the publisher carries out a first assessment of the article to ensure the topic fits within the scope of the journal and that the quality is high enough for the next steps. If it is not, the article is rejected and the process ends.
3. If the editor makes a positive assessment, they send the article out to a number of scientific

experts who are usually working in the same field as the author of the article. These are the 'peer-reviewers' who assess the quality of the methods, results and conclusions presented in the article, and give their recommendation on whether the findings are new and relevant enough to warrant publication. At this stage, they identify possible errors or limitations that may have been overlooked while the research was carried out or during the writing of the article.

4. The editor considers the reviewers recommendation and decides whether to reject the paper for publication at this stage or whether to proceed. If the reviewers recommend that additional work is needed to improve the article, the original author is given a chance to make changes and respond to the reviewers' comments.
5. The editor receives the updated article and makes the final decision whether the article should be published.

Experts commonly remain anonymous to all but the editor during the review process. However, there are 'open' peer-review processes where the reviewer's identity is known, or more rarely where peer-review is carried out after publication of the original submitted article (for example on the European Commission's [Open Research Europe](#) platform).

Peer-reviewers are not paid for their work reviewing articles, but many consider it as part of the job of being an academic researcher. While some consider the time spent to be burdensome, surveys have found that most scientists consider their peer-review work to have several personal benefits including helping them keep up with the latest research and stimulating new research ideas, the possibility to see new studies first, allowing them to build good relationships with prestigious journals and contribute to the research community.¹

However, peer-review is not fool-proof. Criticisms include that the process is not optimized for detecting errors,² plagiarism or research misconduct, and that it takes too long (up to several months from submission to publication) and can therefore stifle innovation. On the whole though, peer-review is considered an essential tool in ensuring the quality of published research, and a rigorous peer-review process is a mark of a credible academic publisher. In recent years, there has been an explosion in the number of online journals that do not carry out thorough peer-review before publishing studies, which can make it difficult for those outside the reviewing process to identify good quality research studies. These journals are sometimes called 'predatory.' In addition to not providing a trustworthy peer-review process they may, for example, charge publication fees, actively solicit research manuscripts or do not provide quality editorial services. As such, they take advantage of researchers who want their work to be published, while undermining the integrity of their research and its potential impact. This can complicate the task of distinguishing reliable research from unreliable sources.

Who funds nutrition research?

Nutrition plays a fundamental role in contributing to public health and well-being. It is therefore important that researchers have the means to investigate the links between diet, health and disease risk and expand our knowledge in this area. However, conducting high-quality and rigorous research is expensive, so where does the funding come from?

Nutrition research can be funded through public sources like grants provided by national research funding agencies or international organisations such as the European Commission. In order to get funding to carry out a study, researchers write a grant proposal in response to a call for proposals issued by the funding agency matching its remit. The funding agency evaluates the grant proposal and

if successful, the researchers receive the money they need to carry out the specific research project that was outlined in the proposal. This process can be very competitive and can involve tens or even hundreds of proposals competing for the same funding opportunity.

The amount of public funds available for nutrition research depends upon the priorities of governments and funding agencies, and also competes with other areas of research (e.g., medical research, agricultural research, etc.). Some experts believe that nutrition research does not receive enough funding from public sources.^{3,4}

Foundations and private companies also fund nutrition research. In 2018, one paper estimated that 13.5% of scientific articles published in the top 10 nutrition related academic journals had involved affiliation with or funding from the food industry.⁵ The funding of nutrition research by the food industry is often viewed with concern and criticized as a way for companies to promote their own interests. However, stopping the private funding of nutrition research would reduce the financial support needed to investigate key areas where more knowledge is needed. So how can we reduce the risk of bias in research that receives funding from private sources? Some safeguards that are commonly put in place include:⁶

- Pre-registration of studies: this involves defining what hypothesis you will be testing, describing a research plan in advance and submitting it to a public registry. This ensures that the scope of a study is not altered part way through in case of unfavorable results.
- Full disclosure of all funding and potential conflicts of interest: all people involved in the study must publicly declare any private interests (such as financial interests, affiliations, personal relationships) that could potentially affect professional judgement and bias research.
- Control of research: a contract should be signed that makes clear that the study design and the execution of the research (e.g., the analysis of data and writing up the results) should be in the control of the researchers and not the funding party.
- Freedom of researchers to publish: when researchers receive funding from industry, they must be assured the freedom to publish their results. This ensures that companies cannot withhold or refrain from publishing data that may negatively impact their business.

Another way to fund nutrition research is through public-private partnerships (PPPs), long-term collaboration agreements between two or more public and private sector organisations. An advantage of PPPs is that governance or steering bodies can be established to ensure separation of the funding and decision-making parties and reduce the risk of bias in research activities. An example is Top Institute Food & Nutrition from the Netherlands, a public-private partnership for food and nutrition research.

What is open-access publishing and why is it important?

In traditional publishing models, peer-reviewed academic journals charge a fee for readers to access their articles. This can be a one-off payment to access a single article or issue, or a subscription fee that allows access to all their published articles. These fees tend to be high and are usually paid by universities or research institutions to allow their staff and students to access published research. The fees cover the journals expenses related to editing, peer-review, hosting and archiving.

Some journals are moving to other publishing models such as Open Access. In open access publishing, academic papers are freely available online to anyone.⁷ In this case, the costs related to publishing an article are usually paid by the researcher who has submitted the article. Publishing open access can

lead to a wider audience and greater impact of articles since they are more likely to be read and cited. Making research findings freely available also promotes innovation and potentially allows more people to make use of existing results. More and more, when research is funded by public money, there is an obligation to publish results using open access.



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