Contents lists available at ScienceDirect

# Preventive Medicine

journal homepage: www.elsevier.com/locate/ypmed



Miguel Cainzos-Achirica<sup>a,b,c,1</sup>, Usama Bilal<sup>d,e,1</sup>, Mahmoud Al Rifai<sup>a</sup>, John W. McEvoy<sup>a,f</sup>, Roger S. Blumenthal<sup>a</sup>, Karan Kapoor<sup>a</sup>, Jose Maria Martinez-Sanchez<sup>g</sup>, Josep Comin-Colet<sup>b,h</sup>, Manel Pladevall-Vila<sup>c,i</sup>, Michael J. Blaha<sup>a,j,\*</sup>

<sup>a</sup> Johns Hopkins Ciccarone Center for the Prevention of Cardiovascular Disease, Johns Hopkins Medical Institutions, Baltimore, MD, USA

<sup>b</sup> Bellvitge University Hospital and Bellvitge Biomedical Research Institute (IDIBELL), L'Hospitalet de Llobregat, Barcelona, Spain

<sup>c</sup> RTI Health Solutions, Pharmacoepidemiology and Risk Management, Barcelona, Spain

<sup>d</sup> Urban Health Collaborative, Drexel Dornsife School of Public Health, Philadelphia, PA, USA

<sup>e</sup> Social and Cardiovascular Epidemiology Research Group, School of Medicine, University of Alcala, Alcala de Henares, Madrid, Spain

<sup>f</sup> Welch Center for Prevention, Epidemiology and Clinical Research, Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, USA

<sup>8</sup> Department of Basic Sciences, International University of Catalonia, Barcelona, Spain

<sup>h</sup> Department of Clinical Sciences, University of Barcelona, Barcelona, Spain

<sup>i</sup> The Center for Health Policy and Health Services Research, Henry Ford Health System, Detroit, MI, USA

<sup>j</sup> Department of Epidemiology, Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, USA

ARTICLE INFO

Keywords: Communication foods nutrients nutritional epidemiology observational

## ABSTRACT

Observational epidemiological studies involving foods and nutrients often attract great attention from both the press and the public as they involve substances that are part of the daily lives of millions of individuals. In the digital era, findings of this research can be disseminated to very large audiences almost instantaneously, informing health beliefs and potentially triggering lifestyle changes. In this context, communication of results from observational nutritional epidemiology often involves specific issues that may limit the accuracy of the information ultimately being delivered to the public. In this narrative review we discuss some of these issues, with a special attention to the selective reporting of research studies by the media, the presentation of study findings as if they were free of bias, the reporting of inconsistent study results, and the issues related to the real-life uptake of research findings presented in the press. Collaborative efforts by all stakeholders involved in the dissemination process may help ameliorate this situation, and with this purpose we discuss some innovative approaches that may help reduce these issues.

Declaration of conflicts of interest: The authors declare that they have no conflicts of interest relevant to the content of this manuscript.

#### 1. Introduction

"The recent report that coffee may cause pancreatic cancer was presented in a pattern that has become distressingly familiar. The alleged carcinogen is a commonly used product. The report was given widespread publicity before the supporting evidence was available for appraisal by the scientific community and the public received renewed fear and uncertainty about the cancerous hazards lurking in everyday life"

A.R. Feinstein, Journal of the American Medical Association, 1981 (Feinstein et al., 1981) In the *digital* era, communicating findings of scientific research to the public has become easier and faster than ever before. Information reaches people almost 24 h a day through a number of channels, including mass media, the internet, social networks, and even smartphone chat groups. Most of these channels are also used to disseminate the results of scientific studies to the public, almost immediately after their publication in scientific journals (Hart et al., 2017; McClain, 2017; Jang et al., 2017).

Communication of research findings to the community is an essential part of scientific work, and the current information environment represents an extraordinary opportunity for science. Nevertheless, the current scenario also involves novel challenges (Ventola, 2014), such as the selective dissemination of – often extreme – study findings by the

E-mail address: mblaha1@jhmi.edu (M.J. Blaha).

https://doi.org/10.1016/j.ypmed.2018.08.024 Received 29 March 2018: Received in revised form

Received 29 March 2018; Received in revised form 13 August 2018; Accepted 21 August 2018 Available online 23 August 2018

0091-7435/ © 2018 Elsevier Inc. All rights reserved.







<sup>\*</sup> Corresponding author at: Ciccarone Center for the Prevention of Cardiovascular Disease, The Johns Hopkins Hospital, Blalock 524D1, 600 N Wolfe St, Baltimore, MD 21287, USA.

<sup>&</sup>lt;sup>1</sup> Miguel Cainzos-Achirica and Usama Bilal contributed equally as co-first authors.

media, the poor communication to the public of the methodological limitations of research, or the frequent exposure to contradictory health-related messages; among others. These issues are important as they may have implications for the public's health, and for the effectiveness of future preventive and health promotion campaigns.

Although these issues may affect the dissemination of any type of scientific research, they may be particularly salient when it comes to the communication of observational studies, which may be less robust, in terms of internal validity, than experimental studies (von Elm et al., 2007). Indeed, observational research is considered to be in a lower hierarchical level than experimental science, as exposures are not randomized and the risk of bias is greater. Nevertheless, for many research questions it represents the most feasible and potentially the only ethical approach. A paramount example of this is the communication of findings from observational nutritional epidemiology (Lachat et al., 2016; Mandrola, n.d.), a discipline that attracts great attention from the press and public as it involves substances consumed by billions of individuals throughout the world.

In this review, we discuss some of the potential issues often derived from the communication of findings from observational nutritional studies to the public. For this purpose, we use as examples the dissemination by the general media of findings from studies on the potential health effects of foods such as coffee, nuts, or chocolate, among others. These studies usually get immediate attention from the media, and are often communicated to the public implying strong causal inference. Finally, we explore innovative communication approaches, aimed at reducing these issues.

#### 2. Issue #1: "communication bias"

Researchers are more likely to submit for publication statistically significant results of research rather than null findings. Also, most scientific journals tend to be more willing to publish the former rather than the latter. The combination of these two phenomena is known as "publication bias" (Sharp, 1990; Turner et al., 2008), and has been widely described in the field of observational epidemiology (Stroup et al., 2000; van der Jagt et al., 2008) – as well as in experimental research. Concerningly, publication bias has the potential to bias the results of meta-analyses, which are believed to be one of the best sources of scientific evidence.

We posit that an analogous phenomenon occurs within the general media, which tends to engage in the selective communication of specific research findings among those already published by scientific journals. This "communication bias" can yield an additional layer of reporting bias to the dissemination continuum (Fig. 1). For example, the media usually tends to pay greater attention to studies involving popular substances (e.g., coffee, chocolate), and even more if the findings suggest a strong risk or protective association, as those are usually considered more likely to capture the audience's attention (Feinstein et al., 1981). This is often done regardless of the methodological quality of the studies (Selvaraj et al., 2014).

Of concern, publication bias plus communication bias may result in the dissemination of extreme, outlying study findings as if they were a good representation of the science on a given topic. To help reduce this, preparation of comprehensive reviews on a given topic, and priorization of the dissemination of the findings from systematic reviews and meta-analyses rather than from single studies, could be considered by the media. Input from external experts and groups would also be very valuable. This would allow providing more complete, nuanced information to the public, without losing novelty and impact.

### 3. Issue #2: communication of study results as free of bias

Besides "what" is disseminated, "how" results of studies are presented to the public is also crucial. Thus, a second issue is the communication of findings as if they originated from unbiased study designs (Fig. 1). Many journalists do excellent pieces providing a comprehensive, nuanced evaluation of a scientific study, including interviews with authors and external experts, and a careful evaluation of the methodological limitations and potential alternative causes (Forbes, n.d.; MinnPost, n.d.). Unfortunately, however, sometimes this is not the case, and the information that is presented to the public prioritizes impact, brevity and the use of *catchy* headers over scientific balance and detail. This is particularly evident in environments in which the number of words/characters allowed is restrictive (e.g., Twitter).

Because of the way results of scientific research are presented sometimes by the media, the public may perceive the studies as free of bias (the "*Truth*"); as the first/the best evidence available on a given topic; and may even consider undergoing lifestyle modifications based on the findings published in the report. In this sense, both accompanying editorials and letters to the editor rarely get the media's attention, despite the fact that those often bring up key points that help put the results into context (Bhave & Hoffmayer, 2013; Aberegg, 2012; Leifer, 2017; Guallar et al., 2017).

In Table 1 we present a few examples of the wording used by some general press and online sources to disseminate the findings of a few studies on the potential beneficial health effects of daily intake of foods such as coffee, nuts, chocolate or wine. Despite derived from observational research, the wording used by the media –particularly for the headlines– often implied causality and, in some instances, even encouraged lifestyle changes (The Observer.com, n.d.; CNN.com, n.d.; Medical News Today, n.d.; Naturalsociety.com, n.d.; The Telegraph, n.d.; LiveScience.com, n.d.; Express, n.d.).

It is important to note, however, the challenges that nutritional observational research often faces, which may somehow limit internal validity (Cainzos-Achirica et al., 2018). Indeed, classic potential limitations of observational epidemiology such as selection bias, exposure misclassification, reverse causation, or residual confounding, among

Fig. 1. Publication bias, communication bias, and miscommunication of limitations of scientific studies to the public.

In this figure, we present the process of communication of scientific findings on the associations between an exposure of interest (e.g., daily intake of nuts) and a health outcome (e.g., mortality), from the initial results of research studies, to the information that is finally disseminated to the society by the mass media. The x axis represents the measure of association being used, which quantifies the relative risk of harm or benefit (e.g., hazard ratio, for this example we have defined a range 0.5–2.0); and the y axis represents the acknowledgement of the limitations of the studies being communicated.



Download English Version:

# https://daneshyari.com/en/article/9991948

Download Persian Version:

https://daneshyari.com/article/9991948

Daneshyari.com