BMJ Nutrition, Prevention & Health

# Measurable and immeasurable spread of knowledge for research impact: a reflection on the validated NutComp tool

Lauren Ball,[1,2] Breanna Lepre,[1,2] Clare Van Dorssen[1]

**To cite:** Ball L, Lepre B, Van Dorssen C. Measurable and immeasurable spread of knowledge for research impact: a reflection on the validated NutComp tool. *BMJ Nutrition, Prevention & Health* 2023;**6**:e000723. doi:10.1136/bmjnph-2023-000723

[1]Centre for Community Health and Wellbeing, The University of Queensland, Springfield, Queensland, Australia
[2]NNEdPro Global Institute for Food, Nutrition and Health, St John's Innovation Centre, Cambridge, UK

**Correspondence to**
Professor Lauren Ball; lauren.ball@uq.edu.au

Received 6 July 2023
Accepted 16 August 2023
Published Online First 13 September 2023



## ABSTRACT

**Background** Contemporary research now includes effort to generate impact beyond the creation of new knowledge.

**Methods** This report provides an illustrative case study of tactful research planning and dissemination for impact and provides an emerging pathway for others to holistically track reach, spread and uptake, to create a nuanced impact narrative.

**Results** Nutrition Competence Tool (NutComp) is a validated tool that assesses the self-perceived competence of health professionals in providing nutrition care. Since open-access publication in 2015, it has been used by researchers and health professionals in 28 countries across 6 continents. The reach, spread, uptake and impact of NutComp are summarised, including indicators to support impact tracking for knowledge.

**Conclusion** Given the complex phenomenon of research impact, careful planning is required to capture and attribute research impact.

The contemporary research process has shifted to include planning for impactful work to generate benefits (health, economic, cultural) in addition to building the academic knowledge base.[1] Driving research impact can be considered overwhelming, challenging and time-consuming for some, requiring discerned activities for each phase of the research process.[1] However, considering impact in the planning phase of research can strengthen future potential impact; including identifying the intended user, audience and stakeholders of the work, what their needs are and how these people digest knowledge.[1] The more effort applied to dissemination helps research to become knowledge in the hands of its intended audience.[2] The aim of this report is to showcase an example of concentrated dissemination efforts supporting knowledge use in nutrition research.

In 2015, our research team designed, developed and validated a tool to measure the self-perceived competence of health professionals in providing nutrition care.[3] The tool, called Nutrition Competence Tool (NutComp), was created in response to an identified need to assist health professionals to understand their preparedness to incorporate nutrition into their usual practice. In an effort to maximise reach, the development of the tool was described through a peer-reviewed manuscript and published under an open-access licence in a journal with global readership.[3] We also made a concerted effort to share the tool and publication with key stakeholders such as medical bodies, online via social media, on our research team's website and through professional bodies who could then further disseminate the work through their networks.

The energy we placed in disseminating NutComp has rewarded us with the ability to measure its reach and spread online and across the world. Using traditional and alternative metrics, we can see and report the number of citations, downloads, reads and social media shares of the original article. At the time of writing this reflection, the Altmetric score for the publication is '5, good', which indicates moderate spread of knowledge online beyond citations.[4] The contact author of the publication (Ball) has received a steady stream of emails from researchers and health professionals worldwide since making the tool available in 2015. These people have typically (1) requested permission to use the tool in their work, to which our response is a resounding 'yes', (2) sought advice on the adaptation, translation and/or scoring of the tool, to which we have supported generously and (3) sought collaboration on studies that use the tool, to which we have done so enthusiastically.

Despite these latter activities being harder to publicly capture, this openness to sharing and collaboration has led to NutComp being


**Figure 1** A map showing the worldwide reach of the Nutrition Competence Tool through citations and personal access requests.

used in 28 countries across 6 continents (figure 1). The tool has been used to describe the nutrition competence of different health professions and other related populations, such as doctors, nurses, psychologists, optometrists, medical students, fitness instructors.[5] It has been used within trials to improve the competence of health professionals.[6] It has also been used to inform the development of condition-specific tools adaptations, such as for Parkinson's disease, and for practice-specific topics such as team-based care.[7 8]

Beyond the public-facing indicators of knowledge spread, another story exists for NutComp. This story shows the spread that can be considered hard to measure. The uptake of the NutComp tool has been substantial, yet may not reflect the full potential of its research impact. Impactful research requires an understanding of human need for created work, effort to develop the work and make it accessible, followed by analysis of how the work was used.[1] Table 1 summarises some key concepts in research impact, using NutComp as an illustrative example.

Table 1 illustrates that impact from research reflects the contribution that research makes to the economy, society, environment, culture, public policy or services and beyond. However, while measuring and quantifying impact is important for research advocacy (eg, with funders), accountability, and in the allocation of resources, there are limitations to capturing impact beyond publicly accessible measures (reach, spread and uptake).

Research has been described as a non-linear process, or as Greenhalgh puts it, 'science meanders'.[1] For example, in health-related research, impact (eg, improved quality of care, or reduced mortality rates) may not result until decades in the future, and attribution poses a challenge. Conversely, processes (eg, academic publications, or the uptake of evidence into guidelines and policies) are tangible and attributable short-term measures. In the case of NutComp, it is difficult to track the impact of the tool on the nutrition knowledge, skills and attitudes of health professionals (eg, study participants within the publications which have used NutComp). Further to this, it is almost impossible to capture and attribute the full impacts of the research, such as the influence of this research on subsequent nutrition care practice, and health outcomes. Despite this, we argue that impact activities (eg, dissemination, building relationships with professional bodies and other researchers) remain a critical contribution to impact, and should therefore be an obligatory step in the research process.

**Table 1** Key concepts in research impact, using NutComp as an illustrative example

| Concept | Definition | Indicators | NutComp |
|---|---|---|---|
| Reach | Extent of the dissemination and distribution of research outputs to different audiences. | Publication downloads, publication citations, direct contact with audiences. | 9699 views/downloads (June 2023)<br>36 citations in subsequent research articles (June 2023) |
| Spread | Dissemination of research findings beyond the initial target audience. | Altmetric indicators including social media mentions, email communication. | Altmetric score of '5, good'<br>Responsive and supportive in all email communication |
| Uptake | Research findings incorporated, adopted or used by stakeholders to inform decisions, policies, practices or actions. | Policy or report citations, consultation meetings, narratives. | NutComp is used in 28 countries to describe nutrition competence of different health professions, used within trials as an outcome, tool adaptation to condition specific or setting specific variations. |
| Impact | Widespread and indirect effects of research beyond immediate beneficiaries. | Evaluation of policies or practices, narratives. | Health, economic and social impact of initiatives to enhance the nutrition competence of health professions. |

NutComp, Nutrition Competence Tool.

An authentic impact story should ideally include both traditional and measurable metrics (eg, number of citations) and narrative, immeasurable accounts of the research-impact link, to describe changes in processes and outcomes over time. This report provides an illustrative case study of tactful research planning and dissemination for impact and provides an emerging pathway for others to holistically track reach, spread and uptake, in order to create a nuanced impact narrative.

**Twitter** Breanna Lepre @DrBreannaLepre

**Contributors** All authors contributed to this brief report. All authors contributed to the conceptualisation and design of this study. All authors were involved with the conduct of the study and data interpretation. LB wrote the first draft of the manuscript. All authors contributed to revision of the manuscript and approval of the final manuscript.

**Funding** The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

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**Competing interests** None declared.

**Patient consent for publication** Not applicable.

**Provenance and peer review** Not commissioned; internally peer reviewed.



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