

---

# PHN

## PUBLIC HEALTH NUTRITION

---

Volume 22

---

Number 6

---

April 2019

---

Available online at  
[cambridge.org/phn](http://cambridge.org/phn)

# Public Health Nutrition

Volume 22, 2019 ISSN: 1368-9800

Eighteen issues per year

## Aims and Scope

*Public Health Nutrition* provides an international forum for the publication and dissemination of research and scholarship in the form of peer-reviewed original papers and reviews, and for discussion in the form of editorials, commentaries, and correspondence, with a specific focus on nutrition-related public health.

The scope of *Public Health Nutrition* encompasses nutrition and nutrition policy at a population level, including work on assessment of nutritional status and nutritional environments, communication of nutrition-related information, implementation of programs and interventions, and sustainability of dietary patterns, food systems and supplies. We welcome papers that:

- Address assessment, monitoring, and surveillance of nutritional status or the quality of nutritional environments
- Describe the development and evaluation of methodology for assessment, monitoring, and surveillance in population-based samples
- Identify and analyse behavioural, social, cultural, environmental, economic, and political determinants of nutrition-related public health, and dietary and nutritional factors as determinants of health outcomes

- Build intelligence about the development, implementation, and evaluation of interventions and community nutrition programs and efforts
- Describe, discuss, debate and influence nutrition-related public policies
- Serve to build capacity for effective public health nutrition action, including workforce development and educational issues
- Develop perspectives and models to study diet and nutrition as related to the environment and sustainability.

We prefer papers that are innovative and contribute new knowledge to the literature. Papers should be succinct (ie, usually well under 5000 words not including the abstract, references, tables, figures and acknowledgements). Short communications (<2000 words) are welcome. We publish research, scholarship, and discussions that take a population and preventive approach. In addition to original contributions, ideas and suggestions for topics for debate are also welcome. We publish special issues.

*Public Health Nutrition* is available on the Internet at: [journals.cambridge.org/phn](http://journals.cambridge.org/phn)

## International Editorial Board

### Editor-in-Chief

**Dr. Allison Hodge**, *Cancer Epidemiology Division, Cancer Council Victoria, Australia and Centre for Epidemiology and Biostatistics, University of Melbourne, Australia*

### Deputy Editors

**Dr Kaleab Baye**, *Addis Ababa University, Ethiopia*

**Professor Sandra Capra**, *University of Queensland, Australia*

**Professor Mieke Faber**, *Medical Research Council, South Africa*

**Professor Salome H. Kruger**, *North-West University, South Africa*

**Dr Carl Lachat**, *Gent University, Belgium*

**Dr Stefanie Vandevijvere**, *Scientific Institute of Public Health, Belgium*

**Dr Christina Vogel**, *University of Southampton, UK*

### Editors for Systematic Reviews and Meta-analyses

**Professor Dominique Roberfroid**, *Prince Leopold Institute of Tropical Medicine, Belgium*

**Dr Amin Salehi-Abargouei**, *Sabid Sadoughi University of Medical Sciences, Iran*

### Statistical Editors

**Ms Zulfa Abrahams**, *Human Sciences Research Council, South Africa*

**Dr Flávia Barbosa**, *Nutrition Institute, Brazil*

**Dr Vassiliki Bountziouka**, *Institute of Child Health, UCL, UK*

**Mr Fabio Gomes**, *National Cancer Institute, Brazil*

**Dr Graham Horgan**, *Rowett Institute, University of Aberdeen, UK*

**Dr Eva Maria Navarrete Munoz**, *CIBER of Epidemiology and Public Health, Spain*

### Associate Editors

**Dr Geeta Appannah**, *Universiti Putra Malaysia, Malaysia*

**Dr. Marina Araujo**, *Oswaldo Cruz Foundation, Brazil*

**Dr Kathryn Backholer**, *Baker IDI Heart and Diabetes Institute, Australia*

**Dr. Miranda Blake**, *Deakin University, Australia*

**Dr. Sonia Blaney**, *Université de Moncton, Canada*

**Dr Mona Calvo**, *U.S. Food and Drug Administration, USA*

**Dr Karen Charlton**, *University of Wollongong, Australia*

**Dr. Annalijn Conklin**, *The University of British Columbia*

**Dr. Anniza de Villiers**, *South African Medical Research Council, South Africa*

**Professor Hélène Delisle**, *University of Montreal, Canada*

**Dr Colleen Doak**, *St. Ambrose University, USA*

**Dr Shauna Downs**, *Rutgers School of Public Health, USA*

**Dr. Isabel Drake**, *Lund University, Sweden*

**Dr. Elizabeth Dunford**, *The George Institute for Global Health, Australia*

**Dr. Muriel Gubert**, *University of Brasilia, Brazil*

**Dr Sophie Hieke**, *European Food Information Council, Belgium*

**Dr. Daniel Hoffman**, *Rutgers University*

**Dr. Richard Hoffman**, *University of Hertfordshire, UK*

**Professor Michelle Holdsworth**, *University of Sheffield, UK*

**Dr Alexis Hure**, *University of Newcastle, Australia*

**Prof. Stephanie Jilcott Pitts**, *East Carolina University, USA*

**Dr Irmgard Jordan**, *University of Giessen, Germany*

**Prof. Tilakavati Karupaiah**, *Taylor's University, Malaysia*

**Dr Bridget Kelly**, *University of Wollongong, Australia*

**Dr. Gina Kennedy**, *Bioversity International, Italy*

**Dr. George Kent**, *University of Hawaii, USA*

**Dr Jessica Kiefe-de Jong**, *Leiden University College, The Netherlands*

**Dr Cindy Leung**, *University of California, USA*

**Dr. Katherine Livingstone**, *Deakin University, Australia*

**Dr Carla Lopes**, *University of Porto, Portugal*

**Dr Joreintje Mackenbach**, *VU University Medical Center, The Netherlands*

**Dr. Catherine Mah**, *Dalhousie University, Canada*

**Professor Alida Melse**, *Wageningen University, The Netherlands*

**Asst. Professor Leia Minaker**, *University of Waterloo, Canada*

**Dr Mary Nicolaou**, *AMC, University of Amsterdam, The Netherlands*

**Dr Nasrin Omidvar**, *Shahid Beheshti University of Medical Sciences, Iran*

**Professor Nina Overby**, *University of Agder, Norway*

**Ms Catherine Pereira**, *University of the Western Cape, South Africa*

**Professor Una MacIntyre**, *University of Pretoria, South Africa*

**Dr Koutatsu Maruyama**, *Ehime University, Japan*

**Dr. Carmen Piernas**, *University of Oxford, United Kingdom*

**Dr. YoonJu Song**, *Catholic University of Korea, South Korea*

**Ass. Prof. Natasha Tasevska**, *Arizona State University, USA*

**Ass. Prof. Natasha Tasevska**, *Arizona State University, USA*

**Dr Aida Turrini**, *Agricultural Research Council, Italy*

**Dr. Lana Vanderlee**, *University of Waterloo, Canada*

**Dr Wendy Van Lippevelde**, *University of Gent, Belgium*

**Dr Alison Ventura**, *California Polytechnic State University, USA*

**Professor Jesus Vioque**, *Universidad Miguel Hernandez, Spain*

## The Nutrition Society

The society has as its objective the advancement of the scientific study of nutrition and its application to the maintenance of human and animal health.

Particulars of The Nutrition Society and application forms for membership are available from the Honorary Secretary,

The Nutrition Society, 10 Cambridge Court, 210 Shepherds Bush Road, London W6 7NJ, UK.

Telephone +44 (0)20 7602 0228, Fax +44 (0)20 7602 1756

The Nutrition Society home page is at: <http://www.nutrition-society.org>