

# Public Health Nutrition

Volume 24, 2021 ISSN: 1368-9800  
journals.cambridge.org/phn

## **Publishing, Production, Marketing, and Subscription Sales Office:**

Cambridge University Press  
Journals Fulfillment Department  
University Printing House  
Shaftesbury Road  
Cambridge CB2 8BS  
UK

## **For Customers in North America:**

Cambridge University Press  
1 Liberty Plaza  
Floor 20, New York  
NY 10006  
USA

## **Special sales and supplements**

This journal accepts advertising and inserts. We also provide bulk reprints of suitable papers to meet teaching or promotional requirements. The journal also publishes supplementary material including conference proceedings on behalf of academic and corporate sponsors. Please contact Sarah Maddox at Cambridge University Press for further details (email: smaddox@cambridge.org).

## **Subscription information**

*Public Health Nutrition* is an international journal published 18 times per year by Cambridge University Press on behalf of the Nutrition Society. The online edition is available at journals.cambridge.org/PHN, with free table of contents alert (upon registration).

## **Annual subscription rates**

Volume 24, 2021 (18 issues):  
Internet/print package: £1390/\$2666 Americas only/€2227 EU only  
Internet only: £1006/\$1909 Americas only/€1599 EU only

**Any supplements** to this journal published in the course of the annual volume are normally supplied to subscribers at no extra charge.

**Claims** for non-receipt of journal issues will be considered on their merit and only if the claim is received within six months of publication. Replacement copies supplied after this date will be chargeable.

**Advertising:** The Nutrition Society is willing to include advertisements in its journals. However, it will retain the right to make decisions on which advertisements are acceptable and which are not, and will not be obliged to give reasons to prospective

advertisers for its decisions. The appearance of an advertisement in the Society's journals does not imply endorsement by the Society. For further details, please contact Cambridge University Press.

**Back volumes** will be available in due course. Please contact Cambridge University Press for further information.

**US POSTMASTERS:** Please send address corrections to Cambridge University Press  
1 Liberty Plaza  
Floor 20, New York  
NY 10006  
USA

**Notes for Authors** are available from the publisher at the given address and can be found inside the back cover.

**Offprints:** The author (or main author) of an accepted paper will receive a free PDF of their paper. Additional offprints are available for a fee and must be ordered at proof stage. **No page charges are levied by this journal.**

**Copyright:** As of 1 January 2001 the copyright of all articles submitted to *Public Health Nutrition* are retained by the authors or their institutions. For articles prior to this date permission for reproduction of any part of the journal (text, figures, tables or other matter) in any form (on paper, microfiche or electronically) should be sought directly from the Society, at: The Editorial Office, The Nutrition Society, 10 Cambridge Court, 210 Shepherds Bush Road, Hammersmith, London, W6 7NJ, UK.

**Disclaimer:** The information contained herein, including any expression of opinion and any projection or forecast, has been obtained from or is based upon sources believed by us to be reliable, but is not guaranteed as to accuracy or completeness. The information is supplied without obligation and on the understanding that any person who acts upon it or otherwise changes his/her position in reliance thereon does so entirely at his/her own risk. Neither the Society, nor Cambridge University Press accepts responsibility for any trade advertisement included in this publication.

This journal issue has been printed on FSC-certified paper and cover board. FSC is an independent, non-governmental, not-for-profit organization established to promote the responsible management of the world's forests. Please see [www.fsc.org](http://www.fsc.org) for information. Typeset by Macmillan India Limited, Bangalore, India and Printed in Europe by Bell and Bain, Glasgow.

*Public Health Nutrition* is covered in Science Citation Index Expanded (Web of Science), Current Contents, Agriculture, Biology & Environmental Sciences, Current Contents, Clinical Medicine, CAB ABSTRACTS<sup>®</sup>, Global Health, Index Medicus<sup>®</sup> (MEDLINE<sup>®</sup>), EMBASE, Excerpta Medica, BIOSIS<sup>®</sup> Database and CINAHL<sup>®</sup> Database. *Public Health Nutrition* participates in the following initiatives: HINARI by WHO and AGORA by FAO.

*Public Health Nutrition (PHN)* provides a forum for the presentation of original research findings and high quality reviews of key topics, and for discussion of and debate on of current issues and controversies. It also publishes special issues on major topics of interest. Our field includes research, scholarship, and discussions on public health nutrition, that take a population, health promoting and preventive approach. Papers that do not have this emphasis may be directed to more appropriate journals. Potential contributors are encouraged to read the aims and scope of the journal, and to note and follow the guidelines set out below.

## Content:

- **Original research findings and scientific reviews** are published as full papers usually less than 5000 words, not including the abstract, references, tables, figures and acknowledgements.
- **Editorials** express the opinion of the journal, as represented by its central editorial team, on topics judged by them to be important. Editorials, including guest editorials, are usually co-ordinated and developed by the editorial team.
- **Position papers**, including declarations and other statements of policy, may be invited or unsolicited.
- **Invited commentaries and book reviews** are expressions of opinion on a topical subject. These are commissioned by the members of the editorial team.
- **Letters to the Editors** are usually in response to material published in *PHN*. Submissions are sent to the author for comment and, when possible, published together with the author's reply.

**Submission:** PHN operates an online submission and reviewing system. All manuscripts should be submitted to <http://mc.manuscriptcentral.com/phnutr>. Please contact the Editorial Office on [phn.edoffice@cambridge.org](mailto:phn.edoffice@cambridge.org) regarding any other types of submission.

**Refereeing:** Review articles and articles reporting original research are subject to external review by two or more referees who evaluate manuscripts based on their importance, relevance, and originality. Authors are asked to submit names and contact details (including email address) of up to four potential referees. All other contributions (editorials, position papers, invited commentaries, book reviews, and letters to the Editors) undergo an internal review process by at least two members of the editorial team. Invited commentaries and book reviews may also be checked externally as necessary to avoid technical errors and to improve salience.

**Copyright:** At the time of acceptance, authors will be asked to provide a completed copy of the 'Licence to Publish' (in lieu of copyright transfer), available at <https://www.nutritionociety.org/>. It is the author's responsibility to obtain written permission to reproduce any material (including text and figures) that has appeared in another publication.

**Preparation of manuscripts:** Please refer to the full Directions to Contributors on our website (<http://www.nutritionociety.org>). Manuscripts should be in clear and concise English, and spelling should follow the Oxford English Dictionary. For authors whose native tongue is not English, in-house editorial attention to their contributions will improve clarity. On acceptance, all contributions are subject to editorial amendment to conform to house style. Manuscripts should be prepared in a common word processing package (Word for Windows is preferred) in Times New Roman or other common typeface, prepared with double-spaced text, at least 2 cm margins, and page and line numbers. Standard abbreviations and SI units must be used.

## Disclosure of financial support and any competing interests.

The submission must include a statement within an Acknowledgements section reporting any competing interests (financial and non-financial), all sources of funding, and the nature of the contribution of each author to the manuscript. If there are no competing interests, this must be stated. Authors are asked to provide this information during the submission process and should not include it as part of the manuscript to allow for double-blind reviewing.

## Arrangement of papers:

1. **Title page** should include the article title, author(s), affiliation(s), up to eight keywords, one author identified for correspondence (with full postal address, telephone and fax numbers, and email address), and a running title of up to 45 characters. The title page should be submitted online as a separate cover letter, not as part of the manuscript, to enable double-blind reviewing.
2. **Abstract** should be structured, usually using the following internal headings: Objective, Design, Setting, Subjects, Results, Conclusions. Abstracts should be intelligible without reference to text or figures and should not exceed 250 words.
3. **Text** should be divided under headings (typically to include Introduction, Methods, Results, Discussion and Conclusions), and sub-headings as appropriate. Conclusions should include recommendations that derive from the research and that are concrete, feasible, and potentially effective. Emphasising that more research is needed is usually not necessary unless there is specific reason to say so. All submissions must include a statement that the research was conducted in accordance with guidelines laid down by the Declaration of Helsinki and approved by an ethics review committee.
4. **Acknowledgements** (sources of funding, competing interests declaration, authorship responsibilities, acknowledgements) should be provided during the submission process, not as part of the manuscript.
5. **References** should be in Vancouver style. Please refer to the full Directions to Contributors.
6. **Tables** should be reduced to the simplest form and should not be used where text or figures give the same information. Each table must be accompanied by a clear and concise caption that is comprehensible without reference to the text. Longer tables may be published online only.
7. **Figures** should be numbered, and legends should be provided. Each figure, with its legend, should be comprehensible without reference to the text and include definitions of abbreviations.

**Proofs:** Correspondence and proofs for correction will be emailed to the first named author unless otherwise indicated. The author will receive a PDF proof for checking. It is important that proofs be returned promptly. Authors may be charged for any alterations in excess of 10% of original setting.

**Offprints:** The corresponding author will receive a PDF of the published paper free of charge. Offprints are available to purchase and must be ordered before publication.

**Monitoring and surveillance**

Plant-based dietary practices in Canada: examining definitions, prevalence and correlates of animal source food exclusions using nationally representative data from the 2015 Canadian Community Health Survey–Nutrition  
*Mirjana Valdes, Annalijn Conklin, Gerry Veenstra and Jennifer L Black* 777

Food security and alternative food acquisition among US low-income households: results from the National Food Acquisition and Purchasing Survey (FoodAPS)  
*Mayra Crespo-Bellido, Stephanie Grutzmacher and Ellen Smit* 787

Early pregnancy overweight/obesity and length of residence among immigrants in Sweden: a pooled analysis of Swedish population registers between 1992 and 2012  
*Dilana López-Borbón, Jesper Löve and Sol P Juárez* 796

Dietary fat intakes in Irish children: changes between 2005 and 2019  
*Aileen O'Connor, Maria Buffini, Anne Nugent, Laura Kehoe, Albert Flynn, Janette Walton, John Kearney and Breige McNulty* 802

Food insecurity among people who inject drugs in Athens, Greece: a study in the context of ARISTOTLE programme  
*Yana Syssa, Eleni Flounzi, Sotirios Roussos, Angelos Hatzakis and Vassiliki Benetou* 813

Are food and drink available in online and physical supermarkets the same? A comparison of product availability, price, price promotions and nutritional information  
*Prachi Bhatnagar, Peter Scarborough, Asha Kaur, Derya Dikmen, Vyas Adhikari and Richard Harrington* 819

Demographic variations and temporal trends in prenatal use of multiple micronutrient supplements in Beijing, 2013–2017  
*Haiyang Bian, Youchi Tang, Yubo Zhou, Hongtian Li and Jianmeng Liu* 826

**Assessment and methodology**

A culture-sensitive semi-quantitative FFQ for use among the adult population in Nairobi, Kenya: development, validity and reproducibility  
*Catarina Vila-Real, Ana Pimenta-Martins, Jack-Susan Magu, Catherine Kunyanga, Samuel Mbugua, Kati Katina, Ndegwa H Maina, Ana MP Gomes and Elisabete Pinto* 834

Stability of food insecurity status in paediatric primary care  
*Kelly A Courts, Rebecca A Hubbard, Hans B Kersten and Heather Klusaritz* 845

Reliability and validity of Arabic version of revised general nutrition knowledge questionnaire on university students  
*Mo'ath F Bataineh and Amita Attlee* 851

Evaluation of dietary supplement, functional food and herbal medicine use by dietitians during the COVID-19 pandemic  
*Hulya Kamarli Altun, Merve Seyda Karacil Ermumcu and Nilgun Seremet Kurklu* 861

**Nutritional status and body composition**

Cardiometabolic risk and health behaviours in adolescents with normal-weight obesity: a systematic review  
*Bruna Clemente Cota, Lara Gomes Suhett, Nathália Nogueira Leite, Patrícia Feliciano Pereira, Sarah Aparecida Vieira Ribeiro and Sylvia do Carmo Castro Franceschini* 870

Influence of maternal pre-pregnancy nutritional status on offspring anthropometric measurements and body composition in three Brazilian Birth Cohorts  
*Mariane da Silva Dias, Alicia Matijasevich, Aluisio JD Barros, Ana Maria B. Menezes, Bruna Celestino Schneider, Fernando Pires Hartwig, Fernando C. Barros, Fernando C. Wehrmeister, Helen Gonçalves, Iná S. Santos, Maria Cecilia F Assunção and Bernardo L. Horta* 882

Direct and indirect effects of poor sleep quality on BMI and waist circumference in a female population-based study in Southern Brazil  
*Heloisa Marquardt Leite, Anderson Garcez, Fernanda Baires, Juvenal Soares Dias da Costa and Maria Teresa Anselmo Olinto* 895

Development and validation of protocols for photographed food record by visually impaired people  
*Thais Lima Dias Borges, Marcos Felipe Silva de Lima, Severina Carla Vieira Cunha Lima and Ursula Viana Bagni* 903

**Nutrition communication**

Associations between conflicting nutrition information, nutrition confusion and backlash among consumers in the UK  
*Santosh Vijaykumar, Andrew McNeill and Joshua Simpson* 914

**Behavioural nutrition**

Family function and eating behaviours among Hispanic/Latino youth: results from the Hispanic Community Children's Health Study/Study of Latino Youth (SOL Youth)  
*U Colón-Ramos, R Monge-Rojas, V Smith-Castro, J Wang, Yi Cheng, KM Perreira, L Van Horn, D Sotres-Alvarez, CR Isasi and LC Gallo* 924

The sleeper effect of perceived insufficient milk supply in US mothers  
*Mackenzie DM Whipps and Jill R Demirci* 935

Evaluation of emotional (depression) and behavioural (nutritional, physical activity and sleep) status of Turkish adults during the COVID-19 pandemic period  
*Sevil Karahan Yilmaz and Günay Eskici* 942

**Nutritional epidemiology**

Food insecurity and its association with changes in nutritional habits among adults during the COVID-19 confinement measures in Belgium  
*Stefanie Vandevijvere, Karin De Ridder, Sabine Drieskens, Rana Charafeddine, Finaba Berete and Stefaan Demarest* 950

Dietary supplement use in Korean children and adolescents, KNHANES 2015–2017  
*Ji Hyun Jeon, Moon Young Seo, Shin-Hye Kim and Mi Jung Park* 957

Association between dietary total antioxidant capacity and breast cancer: a case–control study in a Middle Eastern country  
*Bahareh Sasanfar, Fatemeh Toorang, Farzad Maleki, Ahmad Esmailzadeh and Kazem Zendehehdel* 965

**Economics and environment**

Diet-related greenhouse gas emissions and major food contributors among Japanese adults: comparison of different calculation methods  
*Minami Sugimoto, Kentaro Murakami, Keiko Asakura, Shizuko Masayasu and Satoshi Sasaki* 973

**Nutritional epidemiology**

Metabolic syndrome and its relation to dietary patterns among a selected urbanised and semi-urbanised Tibetan population in transition from nomadic to settled living environment  
*Wen Peng, Yan Liu, Maureen Malowany, Hongru Chen, Xiaodong Su and Yongnian Liu* 984

Association between dietary sodium intake and non-alcoholic fatty liver disease in the US population  
*Long Zhou, Yuxuan Yang, Yang Feng, Xiaodan Zhao, Yameng Fan, Jie Rong, Liancheng Zhao and Yan Yu* 993

Distribution characteristics of circulating homocysteine and folate and related factors in agriculture, stock-raising and urban populations: a cross-sectional survey  
*Fengyu Pan, Mulalibieke Heizhati, Lin Wang, Ling Zhou, Jing Hong, Delian Zhang, Gujuan Chang, Qin Luo, Le Sun, Na Yue and Nanfang Li* 1001

Early childhood malnutrition trajectory and lung function at preadolescence  
*Farzana Ferdous, Rubhana Raqib, Sultan Ahmed, ASG Faruque, Mohammad J Christy, Eva-Charlotte Ekström and Yukiko Wagatsuma* 1009

Predictors of household food insecurity and relationship with obesity in First Nations communities in British Columbia, Manitoba, Alberta and Ontario  
*Ashleigh Domingo, Jerry Spiegle, Martin Guhn, Hannah Wittman, Amy Ing, Tonio Sadik, Karen Fediuk, Constantine Tikhonov, Harold Schwartz, Hing Man Chan and Malek Batal* 1021

Impact of adverse childhood experiences and fruit and vegetable intake in adulthood  
*Masako Horino and Wei Yang* 1034

Snacking in Japanese nursery school children aged 3–6 years: its characteristics and contribution to overall dietary intake  
*Ryoko Tajima, Kentaro Murakami, Keiko Asakura, Aya Fujiwara, Ken Uechi, Minami Sugimoto, Han-Chieh Wang, Shizuko Masayasu and Satoshi Sasaki* 1042

Coping through a drought: the association between child nutritional status and household food insecurity in the district of Ilembe, South Africa  
*Roisin E Drysdale, Urmiella Bob and Mosa Moshabela* 1052

**Economics and environment**

Density of outdoor food and beverage advertising around gathering place for children and adolescent in East Java, Indonesia  
*Septa Indra Puspikawati, Desak Made Sintha Kurnia Dewi, Erni Astutik, Dian Kusuma, Soenarnatalina Melaniani and Susy Katikna Sebayang* 1066

**Community nutrition**

Determinants of household food security and dietary diversity during the COVID-19 pandemic in Bangladesh  
*Satyajit Kundu, Md. Hasan Al Banna, Abu Sayeed, Mst. Sadia Sultana, Keith Brazendale, Jody Harris, Moumita Mandal, Ishrat Jahan, Mohammad Tazrian Abid and Md Shafiqul Islam Khan* 1079

Nutritional knowledge, attitude and behaviours regarding Coronavirus Disease 2019 among residents of Gonabad, Iran  
*Mozghan Mansoorian, Reza Noori, Shahla Khosravan, Seyed-Amir Tabatabaeizadeh and Nasim Khajavian* 1088

An exploration of key barriers to healthcare providers' use of food prescription (FRx) interventions in the rural South  
*Kara Beth Coward, Anne Cater, Meagen Rosenthal, David Allen III and Queenie Paltanwale* 1095

**Interventions**

Demonstration gardens improve agricultural production, food security and preschool child diets in subsistence farming communities in Panama  
*Rachel J Krause, Marilyn E Scott, Odalis Sinisterra and Kristine G Koski* 1104

Increasing dietary fibre intake in healthy adults using personalised dietary advice compared with general advice: a single-blind randomised controlled trial  
*Iris Rijnaarts, Nicole M de Roos, Taajun Wang, Erwin G Zoetendal, Jan Top, Mariëtte Timmer, Emily P Bouwman, Koen Hogenelst, Ben Witteman and Nicole de Wit* 1117

Targeting the perinatal diet to modulate the gut microbiota increases dietary variety and prebiotic and probiotic food intakes: results from a randomised controlled trial  
*Samantha L Dawson, Mohammadreza Mohebbi, Jeffrey M Craig, Phillip Dawson, Gerard Clarke, Mimi LK Tang and Felice N Jacka* 1129

**Public policies**

COVID-washing of ultra-processed products: the content of digital marketing on Facebook during the COVID-19 pandemic in Uruguay  
*Lucía Antúnez, Florencia Alcaire, Gerónimo Brunet, Isabel Bove and Gastón Ares* 1142

Nutrition and packaging characteristics of toddler foods and milks in Australia  
*Jennifer R McCann, Catherine G Russell, Karen J Campbell and Julie L Woods* 1153

**Workforce development**

Virtual nutrition consultation: what can we learn from the COVID-19 pandemic?  
*Vered Kaufman-Shriqui, Shiri Sherf-Dagan, Mona Boaz and Ruth Birk* 1166

**Erratum**

Dietary supplement use in Korean children and adolescents, KNHANES 2015–2017 – ERRATUM  
*Ji Hyun Jeon, Moon Young Seo, Shin-Hye Kim and Mi Jung Park* 1174

**Corrigendum**

Nutrition and packaging characteristics of toddler foods and milks in Australia – CORRIGENDUM  
*Jennifer R McCann, Catherine G Russell, Karen J Campbell and Julie L Woods* 1175

Cambridge Core For further information about this journal please go to the journal website at: [cambridge.org/phn](http://cambridge.org/phn)



**MIX**  
Paper from  
responsible sources  
**FSC® C007785**

