



Resources in Famine, Starvation, and Nutrient Deprivation

124

Rajkumar Rajendram, Vinood B. Patel, and Victor R. Preedy

Contents

Introduction	2400
Resources	2403
Summary Points	2403
References	2406

Abstract

There is no greater major threat to public health worldwide than nutrient deprivation. Presently nutrient deficiency affects around 800 million people worldwide. Since time immemorial nutrient deprivation or overt starvation has caused organ dysfunction or death. Nutrient deficiency is not only the consequence of drought, famines, or civil upheaval. Malnutrition may arise for a number of

R. Rajendram (✉)

Department of Internal Medicine, King Abdulaziz Medical City, Riyadh, Ministry of National Guard Health Affairs, Riyadh, Saudi Arabia

Diabetes and Nutritional Sciences Research Division, Faculty of Life Science and Medicine, King's College London, London, UK

e-mail: rajkumarrajendram@doctors.org.uk; rajkumarrajendram@hotmail.com

V. B. Patel

School of Life Sciences, University of Westminster, London, UK

V. R. Preedy

Diabetes and Nutritional Sciences Research Division, Faculty of Life Science and Medicine, King's College London, London, UK

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2399

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reasons. For example, some studies have reported that in hospitals as many as half of patients may be malnourished or at risk of malnutrition. The term malnutrition however is very broad and covers undernutrition, imbalance, and overnutrition. This book focuses on the former two umbrellas and coverage ranges from cellular events to public health policies. The detailed molecular events arising from nutrient deprivation are relatively recent discoveries in the overall time scale of research into malnutrition. At the other end of the spectrum, public health policies are constantly being updated to take into account prevailing social, geographical, political, and economic profiles of communities and countries. Within this are policies which encompass future trajectories which aim to prevent famines or undernutrition. Thus there is a complex continuum of knowledge that stretches from our understanding of how molecules in cells behave to the imposition of policies. To further aid colleagues in the acquisition of this knowledge, this chapter lists the resources on the regulatory and professional bodies, journals, books, and websites that are relevant to an evidence-based approach to famine, starvation, and nutrient deficiency, from cells to policy.

Keywords

Books · Evidence · Famine · Journals · Nutrient deprivation · Professional societies · Regulatory bodies · Resources · Starvation

Introduction

Nutrient deprivation is a major threat to global public health. Starvation is the most extreme nutrient deprivation. It results from severe restriction of dietary energy and macro- and micronutrient intake below that needed to sustain life. Accurate data on the extent of starvation is relatively difficult to obtain. However, less severe nutrient deficiency affects around 815 million people on a global basis (Food and Agriculture Organization of the United Nations et al. 2017).

Famine has caused starvation and nutrient deprivation in humans since time immemorial. However, the understanding of the molecular changes relevant to the effects of worsening nutrient deprivation is relatively recent discoveries in the overall time scale of research in this field. It is important to remember that nutrient deprivation arises in a number of scenarios other than due to famine per se. These include undernutrition due to illness, poverty, societal imbalance, conflict, self-starvation, and so on. Nutrient deprivation is under-recognized in modern medicine and to some extent does not receive the attention it deserves. For example, over 20 years ago, Powell Tuck (1997) highlighted that the prevalence of malnutrition in hospital patients is between 19 and 55% using various criteria. Despite this,

Table 1 This table lists the regulatory bodies, professional societies, and organizations involved with famine, starvation, and nutrient deprivation

Regulatory bodies, professional societies, and organizations
Action against hunger www.actionagainsthunger.org.uk
American Society for Nutrition (ASN) www.nutrition.org
Austrian nutrition society www.oege.at
Concern worldwide www.concern.org.uk
Dutch academy of nutritional sciences www.voedingsacademie.nl/english
Dutch malnutrition steering group www.fightmalnutrition.eu
Famine early warning system network www.fews.net
Federation of European Nutrition Societies www.fensnutrition.eu
Finnish society for nutrition research www.protsv.fi/sry
Food and agriculture organization www.fao.org
Food fortification initiative (FFI) www.ffinetwork.org
German nutrition society www.dge.de
Global alliance for improved nutrition (GAIN) www.gainhealth.org
International zinc nutrition consultative group (IZiNCG) www.izincg.org
International Union of Nutritional Sciences (IUNS) www.iuns.org
Iodine global network (IGN) www.ign.org
Malnutrition task force www.malnutritiontaskforce.org.uk
Micronutrient forum micronutrientforum.org
National Institutes of Health www.nih.gov
Nutrition international www.nutritionintl.org
Secure nutrition www.securenutrition.org

(continued)

Table 1 (continued)

Regulatory bodies, professional societies, and organizations
Sight and life www.sightandlife.org
Societe Francaise de nutrition www.sf-nutrition.org
Swiss society for nutrition www.sge-ssn.ch
The Danish nutrition society www.sfe.dk/en
The hunger project www.thp.org
The nutrition society www.nutritionociety.org
United Nations Children's fund (UNICEF) www.unicef.org
United Nations Office for the coordination of humanitarian affairs (OCHA) www.unocha.org
United Nations University www.unu.edu
United States Agency for International Development (USAID) www.usaid.gov
WHO www.who.int
World food Programme www1.wfp.org

undernutrition in the hospital setting still remains problematic (Kruizenga et al. 2016; Morris et al. 2018).

The treatment of starvation and nutrient deprivation may seem obvious and straightforward. However, the relatively recent discovery of the phenomenon known as the refeeding syndrome underlines the importance of gradual replacement of the calorie deficit (Friedli et al. 2017). Yet although refeeding syndrome was described more than 70 years ago, there is still no standard definition or recommendations for its prevention or treatment (Friedli et al. 2017).

Regardless there has recently been an explosion in the knowledge and understanding of nutrient deprivation and starvation. It is now difficult even for experienced scientists to remain up-to-date. To assist colleagues who are interested in understanding more about this field, we have therefore produced tables containing up-to-date resources in this chapter. The expert who assisted with the compilation of these tables of resources is acknowledged below.

Table 2 Journals publishing original research and review articles related to nutrient deprivation, famine, or starvation. We list the top 20 journals which have published the most number of articles over the past 5 years. Although we used Scopus to generate this list, other databases or the use of refined search terms will produce different results

Journals relevant to nutrient deprivation, famine, or starvation
Plos one
Nutricion Hospitalaria
Clinical nutrition
Scientific reports
The lancet
Nutrition
Autophagy
Journal of nutrition health and aging
Journal of parenteral and enteral nutrition
Nutrition in clinical practice
Nutrients
Proceedings of the National Academy of Sciences of the United States of America
Food and nutrition bulletin
European journal of clinical nutrition
Journal of biological chemistry
Maternal and child nutrition
Bioresource technology
Public health nutrition
American journal of clinical nutrition
BMC public health

Resources

Tables 1, 2, 3, and 4 list the most up-to-date information on the regulatory bodies and professional societies (Table 1), journals on nutrient deprivation (Table 2), books (Table 3), and online resources (Table 4) that are relevant to an evidence-based approach to nutrient deprivation.

Summary Points

- Nutrient deprivation is a major threat to global public health.
- Starvation is the most extreme nutrient deprivation.
- Nutrient deprivation is under-recognized in modern medicine.

Table 3 This table lists books on nutrient deprivation due to famine or starvation

Relevant books

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- Biology of Starvation in Humans and Other Organisms.* Merkin TC. Nova science publishers, 2011.
-
- Comparative Physiology of Fasting, Starvation, and Food Limitation.* McCue MD. Springer, 2012.
-
- Contemporary Famine Analysis.* Rubin O. Springer 2016
-
- Diet, Nutrition, and Fetal Programming.* Rajendram R, Preedy VR, Patel VB (editors). Springer, 2017.
-
- Essentials of Pediatric Nutrition.* Samour PQ, King K (editors). Jones & Bartlett Learning, 2013.
-
- Famine: As a Geographical Phenomenon.* Currey C (editor). Springer, 2012
-
- Feast, Famine or Fighting?: Multiple Pathways to Social Complexity.* Chacon RJ and Mendoza RG (editors). Springer, 2017
-
- Global Child Health.* Subrahmanian K, Swamy P. Springer, 2018.
-
- Malnutrition in Chronic Diet-Associated Infantile Diarrhea: Diagnosis and Management.* Lifschitz CH (editor). Academic press, 2013.
-
- Molecular, Genetic, and Nutritional Aspects of Major and Trace Minerals.* Collins JF. Academic press, 2016.
-
- Nutrition in the Prevention and Treatment of Disease,* 4th ed. Coulston AM, Boushey CJ, Ferruzzi M, Delahanty L (editors). Elsevier, 2017.
-
- Pediatric Nutrition,* 4th ed. Samour PQ, King K (editors). Jones & Bartlett Learning, 2012.
-
- Practice-Based Nutrition Care, An Issue of Medical Clinics of North America,* Kahan S, Kushner RF. Elsevier, 2016.
-
- Present Knowledge in Nutrition,* 10th ed. Erdman JW, Macdonald IA, Zeisel SH. ILSI press, 2012.
-
- Protein-Calorie Malnutrition.* Olson R (editor). Academic press, 2012.
-
- Searching for Medical Truths.* Metabolism in health and disease states: Obesity, alcoholism, diabetes and starvation. Owen OE. Infinity publishing.Com, 2006.
-
- Starvation: New Insights for the Healthcare Professional.* QA Acton. Scholarly editions, 2012.
-
- The State of Food Security and Nutrition in the World 2017.* Building resilience for peace and food security. Food and agriculture Organization of the United Nations (FAO), the International Fund for Agricultural Development (IFAD), the United Nations Children's fund (UNICEF), the world food Programme (WFP), and the World Health Organization (WHO). FAO, Rome, 2017.
-
- The Vitamins: Fundamental Aspects in Nutrition and Health.* Combs Jr. GF, McClung JP. Academic press, 2017.
-

- Nutrient deprivation arises in a number of scenarios other than due to famine, in illness, poverty, societal imbalance, self-starvation, etc.
- This chapter lists resources relating to the regulatory and professional bodies, societies, journals, books, and websites that are relevant to an evidence-based approach to nutrient deprivation, starvation, and famine.

We would like to thank the following author for contributing to the development of this resource. Dr Valeria Galetti.

Table 4 This table lists some internet resources relevant to nutrient deprivation, famine, or starvation. Sites listed in Table 1 may also have tools or resources within them. For example, the NIH listed in Table 1 will have information on dietary reference intakes (DRIs), nutrition in cancer care, screening tools, and so on within the domain of its websites

Relevant online resources and information
Detecting and managing malnutrition: Malnutrition universal screening tool (MUST) www.southampton.ac.uk/medicine/research/impact/must_a_new_tool_for_combatting_malnutrition_in_uk_and_overseas.page
Demographic and health surveys program www.dhsprogram.com
Dutch malnutrition steering group – Screening tools www.fightmalnutrition.eu
e-library of evidence for nutrition actions (eLENA) www.who.int/elena/en
Evidence-informed policy network (EVIPNet) www.who.int/evidence/en
Food and agricultural organization – Fighting famine www.fao.org/emergencies/crisis/fightingfamine/en
Food and nutrition technical assistance – Measuring household food insecurity www.fantaproject.org/research/measuring-household-food-insecurity
Food Standards Agency www.food.gov.uk
Global database on the implementation of nutrition action (GINA) http://www.who.int/nutrition/gina/en
Global fortification data exchange www.fortificationdata.org
Global targets 2025 www.who.int/nutrition/global-target-2025/en
International clinical trials registry platform (ICTRP) www.who.int/ictrp/en
Landscape analysis on countries’ readiness to accelerate action in nutrition www.who.int/nutrition/landscape_analysis/en
Malnutrition task force – Resources www.malnutritiontaskforce.org.uk
Nutrition landscape information system (NLIS) apps.who.int/nutrition/landscape/search.aspx
ReliefWeb www.reliefweb.int
The British nutrition foundation-resources www.nutrition.org.uk/healthyliving/resources.html
The World Bank www.worldbank.org
UNICEF data: DefInfo devinfo.org/unicefdata/libraries.aspx/home.aspx
UNICEF data: Monitoring the situation of children and women www.data.unicef.org

(continued)

Table 4 (continued)

Relevant online resources and information
UNICEF-WHO-World Bank joint child malnutrition estimates 2017 apps.who.int/gho/data/node.wrapper.nutrition-2016?lang=en
WHO child growth standards www.who.int/childgrowth/en
WHO country profiles apps.who.int/nutrition/landscape/report.aspx
WHO global data Bank on infant and young child feeding www.who.int/nutrition/databases/infantfeeding/en
WHO global database on child growth and malnutrition www.who.int/nutgrowthdb/en
WHO mortality database apps.who.int/healthinfo/statistics/mortality/whodpms
WHO tracking tool www.who.int/nutrition/trackingtool/en
WHO vitamin and mineral nutrition information system (VMNIS) www.who.int/vmnis/en

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- Friedli N, Stanga Z, Sobotka L, Culkin A, Kondrup J, Laviano A, Mueller B, Schuetz P (2017) Revisiting the refeeding syndrome: results of a systematic review. *Nutrition* 35:151–160
- Kruizenga H, van Keeken S, Weijs P, Bastiaanse L, Beijer S, Huisman-de Waal G, Jager-Wittenaar H, Jonkers-Schuitema C, Klos M, Remijnse-Meester W, Witteman B, Thijs A (2016) Undernutrition screening survey in 564,063 patients: patients with a positive undernutrition screening score stay in hospital 1.4 d longer. *Am J Clin Nutr* 103:1026–1032
- Morris NF, Stewart S, Riley MD, Maguire GP (2018) The burden and nature of malnutrition among patients in regional hospital settings: A cross-sectional survey. *Clin Nutr ESPEN* 23:1–9
- Powell-Tuck J (1997) Penalties of hospital undernutrition. *J R Soc Med* 90:8–11