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Operational research and malnutrition: state of knowledge and food for thought

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Many NGOs have already responded to the requirement of linking action and research. For instance, since 2016, Action Against Hunger has been holding a conference to take stock of these mutual insights and advances in malnutrition. Here, the three authors summarise the latest event held last November.

Nearly 820 million people are currently suffering from hunger worldwide, a figure that has unfortunately risen since 2016. Specifically amongst children under five, 151 million of whom currently have stunted growth while 50 million suffer from acute malnutrition[1]. Efforts by the international community have failed to significantly reduce these numbers, while the second objective of the Sustainable Development Goals, to "end hunger, achieve food security and improved nutrition and promote sustainable agriculture" seems unlikely to be met by 2030.

A failure to comply with international humanitarian law in times of conflict greatly complicates the challenges of "scaling up treatment and prevention for all children", "establishing global food security", and "universal health coverage". Furthermore, there is a disconnect between the commitments of the International Covenant in terms of economic, social and cultural rights, and the real social inequalities that exist. Finally, the climate crisis and the global system of food production and consumption play a significant, often overlooked, role.

Yet various local and regional actors are seeking practical solutions to these issues. By means of platforms and partnerships, they have the potential to transform the situation, by disseminating and discussing ideas through advocacy action which is likely to improve the nutritional status of populations throughout the world. Scientific analysis is also required for a better understanding of the determining factors of malnutrition, and for the validation of operational strategies and health protocols.

R4NUT Conference: a forum for discussion between researchers and practitioners

Since 2016, as a corrective to the lack of international discussion forums for scientific issues relating to humanitarian action against undernutrition, Action Against Hunger (ACF) has organised meetings between networks of academics, field workers and institutions, including sponsors, as part of a conference entitled R4NUT (Research for Nutrition)[2]. Myriam Ait Aïssa, head of research at ACF-France, and Stéphanie Stern, head of the ACF Knowledge Lab project, organised the latest meeting in Paris that took place in November 2019. From the start, they

[1] See the 2018 United Nations report on food and agriculture: www.fao.org/3/I9553FR/i9553fr.pdf
[2] See the Conference website: http://research-for-nutrition-conference.org

favoured a multisectoral approach to better analyse the causes of undernutrition[3], whilst challenging the relevance of field actions.

Issues raised by humanitarian intervention, such as its articulation with development objectives, the consequences of protocols on the ethics of action, and the mobilisation of public health researchers and decision-makers from partner countries, were raised over the course of the conference's presentations and scientific discussions.

In order to overcome the divisions between methods of intervention and professional sectors, this latest edition of R4NUT was structured around the "continuum between the prevention and the treatment of undernutrition". This covered a range of issues including: stunted growth or acute malnutrition as malnutrition categories to be linked together and treated contiguously by breaking down the barriers between sectors; better addressing undernutrition throughout different life stages by taking a family-centred approach; exploring new diagnostic horizons for malnutrition and their complementarity, and defining the challenges ahead, many of which are linked to the collection and use of scientific data. Over 200 people attended the twenty or so presentations and took stock of the thirty-odd research "posters" selected by an independent scientific council presided by Hélène Delisle from the University of Montreal. Based on these results, our aim in this article is to clarify the issues in the fight against undernutrition. These issues make no claim to comprehensiveness, but they represent inescapable priorities.

One of the major recommendations, made specifically by Alan Jackson from the University of Southampton, a pioneer in care for malnourished children, concerned the training of healthcare providers in matters of nutrition and the integration of nutrition into the health system. Overall, participants highlighted the need for a more systematic implementation of interventional research in order to appreciate the implementation process of programmes, as well as the factors that may affect them[4].

Going beyond siloed interventions in favour of a continuum of care

Up until now, the approach to malnutrition has mainly involved standalone programmes, ranging from acute to chronic malnutrition, severe to moderate malnutrition, complicated to uncomplicated malnutrition, prevention to treatment, specific nutrition interventions to interventions involving nutrition across the entire health system.

Breaking down barriers between interventions

Yet a continuum of care (CoC), composed of complete and integrated programmes within the health system, is essential in order to ensure adequate and accessible services and respond to nutritional needs. This continuum must focus on reaching mothers and young children in the most critical places at the most critical times. This means that every child must receive

[3] See the conceptual framework of the causes of malnutrition developed in the 1990s by UNICEF: https://www.unicef.org/french/sowc98/f025.htm, on the basis of research by ACF and other actors: this schema is currently under debate, being reconsidered in the light of contributions from research in the field of undernutrition, to take contemporary issues into account, namely the climate crisis and the loss of biodiversity, as well as the coexistence of over and undernutrition: www.fao.org/3/I9553FR/i9553fr.pdf, but also less well-researched factors such as differences in gender valuation (cf. Françoise Héritier : *L'exercice de la parenté*, 1981), or the repercussions of living conditions for exiles in host countries.

[4] See presentation by Kenda Cunningham, Senior Technical Consultant for the Suaahara programme, Helen Keller International Nepal, and the website: https://www.implementnutrition.org

appropriate nutritional care through different coordinated programmes. This continuum therefore implies breaking down barriers between sectors and methods of intervention.

The simplification of protocols, which aims to improve the reach of nutritional care within health systems, must be accompanied by a change in narrative in which prevention is not dissociated from treatment, emaciation (acute malnutrition or wasting) is not separated from other forms of undernutrition, such as stunting or deficiencies in micronutrients, and nutritional rehabilitation services are not dissociated from other services, such as growth monitoring, and wider prevention services.

The NIPP approach (nutritional impact and positive practices) discussed during the conference[5] therefore proposes an alternative to traditional food aid programmes, which are overwhelmingly focused on inputs. These have either proven to be inefficient in terms of reducing rates of malnutrition or have only produced short-term effects. As a corrective, NIPP includes sensitive sector-specific elements such as global health, mental health and the practice of care, drinking water, hygiene and sanitation, food security and means of subsistence. The NIPP approach also aims to improve nutrition and care practices in households affected by or at risk of malnutrition, thanks to participative learning about nutrition/health/hygiene-sanitation and the promotion of dietary diversity (including by means of small-scale agricultural production). NIPP programmes aim to highlight the link between prevention and treatment, as well as improve the nutritional status of people who are already malnourished, whilst also focusing more generally on an attempt to "prevent" the appearance of malnutrition:

- by means of practical sessions aimed at behavioural change, based on the main causes of malnutrition in order to raise awareness and promote practices, both for carers and families (through women's support groups, for example);
- by making nutritious food more affordable and accessible, including locally available foods, for example using micro-gardening to improve household food security;
- with participative cooking demonstrations to improve nutritional status, diets and practices of care.

Integrated programmes involving both the prevention and treatment of undernourishment have considerable potential to reduce the prevalence of malnutrition by limiting its incidence and improving the efficiency of its treatment. Proof is lacking, however, with regard to the means of successfully integrating preventive services into treatment programmes for acute malnutrition. Interventional research is particularly important here in order to enable the comparative analysis of different strategies and thereby test the efficiency of the NIPP approach.

On the other hand, a number of arguments have been found to support the role of families, in all of their forms, which are the main providers of protection, support and socialisation for children and young people, and which exert a primordial influence on children's survival, health and nutrition.

[5] Marlene Hebie, GOAL, "*Nutrition Impact and Positive Practices* (NIPP), a multisectoral behaviour-change approach supporting the continuum of undernutrition prevention and treatment at community level".

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Facilitating treatment at the community level

Twenty years ago, the only lifesaving treatment available for malnourished children had to be provided by a doctor in a hospital. Today, the treatment of acute malnutrition is increasingly moving from hospitals back to the communities, so that children who live far away from health centres can still have access to it, thanks to door-to-door treatment.

Another critical point in terms of the continuum of nutritional care is the link between hospital services for complicated cases and community management for uncomplicated cases. Approaches that simplify treatment protocols for severe acute malnutrition in health centres and for community health workers aim to facilitate the treatment of a number of moderate-to-acute cases of undernutrition, thereby reducing the risk of overload for health centre staff.

In order to improve access to and coverage of nutritional treatment programmes on a wider scale, global and national nutritional policies must support the treatment of severe acute malnutrition by community health workers. The current approach to community management of acute malnutrition (CMAM) is centred around health centres and is not designed to include people living in areas with limited access to health infrastructures.

Integrated community case management (iCCM) is a strategy that aims to improve access to essential health services by training and supporting community health workers (CHWs) to diagnose and treat a number of illnesses amongst children under five. The general aim is to increase the number of children receiving treatment for acute malnutrition by transforming the current model of service provision. Studies carried out by Pilar Charle Cuéllar and her colleagues at Action Against Hunger in Niger, Mali and Mauritania[6] have shown that allowing community health workers to treat severe acute malnutrition can improve access to treatment and may reduce the risk of failure, whilst remaining a potentially cost-effective intervention: "There is no turning back", as certain participants declared. Others, on the contrary, highlighted the need for caution so as to "leave no one behind", since the diagnostic tools and simplificationsof protocols remain problematic.

A pressing need for better diagnoses and stabilised strategies

To effectively prevent and treat acute malnutrition, it is essential to have sensitive and specific indicators. Guides and protocols intended to evaluate children's nutritional status must be clear, coherent and standardised. Directives established by different international agencies, such as the World Health Organisation (WHO) and different countries concerning children's admission to and discharge from nutrition programmes differ significantly from protocols used in the field. In this context, Benjamin Guesdon[7] and his colleagues at ACF simulated and studied the impact of nine different criteria for discharge protocols for children based on community management of acute malnutrition (CMAM). The authors compared the recovery rate for each discharge criterion with the recovery rate obtained when the WHO recommendations were strictly applied, and determined which proportion of children were still affected by acute malnutrition (according to the standard case definition) amongst the children who were considered to be cured. They noted that a variable and not insignificant proportion of children who were considered to be cured

[6] Pilar Charle Cuéllar, Acción contra el Hambre, "There is no turning back. Scaling up of severe acute malnutrition treatment with community health workers".
[7] See the presentation: Substandard discharge rules in current severe acute malnutrition management protocols: An overlooked source of ineffectiveness for programmes?

could still be classified as suffering from moderate acute malnutrition (MAM) or severe acute malnutrition (SAM). These results support the fact that a neglected, variable and relatively high proportion of malnourished children are incorrectly classified as cured by CMAM programmes (depending on the protocols, between 5% and 31% were classified as cured whilst remaining severely malnourished), mainly as a result of discharge criteria that are inferior to the norms fixed by the WHO's reference protocols. To advance the discussion, a multicentred "OptiDiag" study (optimisation of diagnosis) carried out in Bangladesh, Burkina Faso and Liberia[8] explored the nutritional status and risks of morbidity and mortality associated with children suffering from uncomplicated acute malnutrition with the different case definitions of severe acute malnutrition. As well as routine anthropomorphic measures, the study examined a series of indicators of the children's clinical and nutritional status, such as metabolism biomarkers and the risk of mortality. The results supported the need for both mid-upper arm circumference (MUAC) and weight-for-height as independent diagnostic criteria to detect and treat acute malnutrition.

Beyond the critical evaluation of admission and discharge criteria for acute malnutrition, discussions about treatment protocols provided new perspectives. Amara Khan and her colleagues in Pakistan shared the lessons they had learned from a cluster randomised control clinical trial which compared different feeding protocols and the existing protocol for the treatment of acute malnutrition[9]. The preliminary results showed that a reduced dose of a ready-to-use therapeutic food (RUTF) combined with local foods could be as effective for treatment as a full dose of imported RUTF. These results are consistent with those from a study by S. Kangas and her partners[10] in Burkina Faso, which showed identical growth amongst children receiving a RUTF dose reduced by half at the end of the treatment.

On another subject, maternal mental health is increasingly being recognised the world over as being an essential factor in women's wellbeing, which has an indisputable and lasting impact on the health and nutrition of their children. Yet there is a clear lack of strategic responses and diagnostic capacities. The relevance of integrating low-cost mental health interventions, with the participation of non-specialised or community health providers, in global efforts against malnutrition is increasingly being discussed, as is the need to reinforce the skills of carers and, more broadly, the mental health components of health systems. The study presented by Food for the Hungry[11], like an increasing number of studies carried out in low and middle-income countries, suggests that altered maternal mental health, and especially maternal depression, is a risk factor for malnutrition amongst young children, independently of the influence of poverty, situations of vulnerability and other diseases. Equally, it must be noted that the socio-economic factors that contribute to the poor nutritional status of mothers and children are not given enough attention in the programmes.

[8] See the presentation from Rayhan Mostak, Fondation Palli Karma-Sahayak, and Trenton Dailey-Chwalibóg, *Action contre la Faim France*, "Clinical significance of the heterogeneous anthropometry-based case definitions of Severe Acute Malnutrition in children: preliminary results of the multi-centric 'OptiDiag' study and policy implications".
[9] See the presentation: "Comparison between different feeding protocols and existing protocol for the treatment of acute malnutrition (A Cluster Randomized Controlled Clinical Trial)".
[10] See the poster from R4NUT 2019: "Reduced doses of RUTF in the treatment of severe acute malnutrition in Burkina Faso: impacts on anthropometrics, implications for programmes and body composition".
[11] See the presentation from Erin Pfeiffer (Food for the Hungry International), "Improving Child Growth Outcomes by Reducing Maternal Depression: A Randomized Controlled Trial on Interpersonal Psychotherapy for Groups (IPT-G) in Uganda".

Greater consideration of social determinants and human rights

Children and young people who are chronically exposed to factors that undermine their nutrition give rise, in adulthood, to the next generation, which itself is more exposed to risks of poor health and malnutrition. This vicious circle is exacerbated in culturally marginalised communities, all the more so in the context of migration. Interventions that provide contextualised knowledge, develop useful skills and guarantee a safe and favourable environment can have a positive impact on the reduction of child malnutrition.

In India, various nutrition programmes managed by organisations such as ACF often have unsatisfactory rates of coverage and rehabilitation. The seasonal migration of certain subsistence communities within an inhospitable social environment, without health coverage, has been identified as one of the determining factors of malnutrition. The team at ACF India[12] shared its innovative strategy for comprehensively mapping the links between the migration and nutrition of vulnerable communities in the Maharashtra region in India, to develop an efficient, sustainable and progressive intervention aimed at minimising the impact of seasonal migration on the nutritional status of children under five. Debates during the conference addressed issues linked to the rights of children and their families to receive care and social protection during their migrations, and the necessary work on the social representations of the administration and the care workers. It must be noted that, if health education does not address social representations of undernutrition, it can contribute to stereotypes regarding the supposed lack of care by community members towards its malnourished children, as shown by the work of Sabine Caillaud and her partners in India[13].

A team from Ekjut[14] presented the lessons drawn from a quasi-experimental study carried out in rural areas in the east of India. The team observed that training and participative action meetings with groups of women, as well as personalised advice during home visits and the provision of free childcare for children from six to 36 months had the most significant effects on emaciation and the status of being underweight, amongst children from more marginalised families with lower incomes.

Women and young children are considered to be very vulnerable groups in situations of humanitarian emergencies. In Ethiopia, Action Against Hunger's Baby-friendly spaces (BFS), which were set up in periods of crisis, welcome pregnant and breastfeeding women with children under two[15]. This programme provides them with the necessary emotional support for optimal breastfeeding, psychosocial support and quality time with their children.

Finally, the nutritional status of women and children depends on differences in gender valuation[16], as discussed in the light of research carried out in Somalia on cash transfer aid to families. The power of decision-making in predominantly patriarchal societies will overwhelmingly fall to men, even though women are the main dispensers of care for children and

[12] See the presentation from Pawankumar Patil, Action Against Hunger India, "An innovative intervention package enhancing the reach and impact of CMAM program on children under-5 from tribal migratory population in Maharashtra, India".
[13] See the poster "Social representations of undernutrition and sanitary behaviours in Nepal : a comparative study".
[14] See the presentation from Gope Rajkumar and Rath Shibanand, Ekjut, "Do creches, participatory women's groups and home visits to prevent child undernutrition benefit the most marginalised? Analysis from a quasi-experimental study in rural eastern India".
[15] See the presentation from Andy Solomon-Osborne, Action Against Hunger Ethiopia, BFS+, "Process evaluation of an integrative health approach for lactating women and their babies aged less than 6 months in Nguynyel camp, Gambella, Ethiopia".
[16] See note n°3 on the conceptual framework of the causes of malnutrition.

the majority of communication on nutrition and health is carried out by men[17]. Adopting a better approach which takes the gender dimension into account would involve recognising the unequal power relations between sexes within families and society, and striving to reduce the impact of this inequality, by encouraging female decision-making, for example in terms of the way in which food and resources are distributed, whilst involving men and fathers in feeding and caring for their children.

Practical responses were presented with regard to the lack of reliable data, limitations to access to certain fields and the dearth of social science studies, as well as risk evaluation capacities.

Responding to challenges

Although the data revolution is increasingly shaping our ways of creating, thinking, collaborating and acting, frontline data collection for nutritional indicators is most often carried out manually, and stored in registers. As part of the struggle against all forms of malnutrition by 2030, we must urgently find ways to better evaluate and compare data in order to monitor programme results and facilitate the development of strategies, whilst respecting people's private lives and the principles of humanitarian intervention, starting with its independence.

Due to access and logistical constraints, direct data collection in a number of hard-to-reach locations is not always possible, which complicates the characterisation of needs and the development of responses. To follow the humanitarian needs and population movements of people in hard-to-reach areas, REACH tested data collection in South Sudan using the "area of knowledge" (AoK) method[18], without using anthropomorphic data in the first instance. Displaced people, those belonging to the host community, and tradesmen took part in interviews in the field or by telephone in order to take stock of malnutrition. The limitations of this method must be highlighted, due to seasonal variations in the answers and an under-reporting of situations where a high number of children are malnourished. Nevertheless, monthly sectoral breakdowns for the humanitarian community, namely in terms of food security and means of subsistence, drinking water, sanitation and hygiene, and shelter, can be useful, but must be complemented by in situ analysis.

Moreover, the climate crisis and the collapse of biodiversity have shed light on the importance of collecting more data in order to better understand the scale of the changes underway in the development of malnutrition rates, in order to be in a position to anticipate the advent of new cases and implement efficient responses, whether in terms of food security or of care. Alan Ricardo Patlan Hernandez's presentation[19] aimed to study the correlations between hydro-climatic data and nutritional status in the south-west of Madagascar, described as a "hot spot" for climate change by the Intergovernmental Panel on Climate Change (IPCC). Although the study did reveal a correlation between groundwater levels, rainfall, leaf area indices and the rate of acute malnutrition, new research is planned to include data on food production, household incomes and morbidity. The value of an observatory for public health decision-makers, which would also be accessible to populations, was highlighted.

[17] See the presentation "Cash-based Assistance and the Nutrition Status of Pregnant and Lactating Women (PLW) and Children in the Somalia Food Crisis: Does Transfer Modality Matter?"
[18] Saeed Rhaman, REACH Initiative (joint initiative between IMPACT, ACTED and UNOSAT), "Remote Monitoring of Perceived Malnutrition in South Sudan: A tool for surveillance and follow-up".
[19] See the presentation "Investigating the relationship between hydro-climatic data and nutritional status to improve the early warning system (EWS) in Southern Madagascar". See also: http://ecole-pasteur.cnam.fr/promotion-2018-2019-et-les-anciennes--1019278.kjsp?RH=1394630616171&RF=1394630400330

Future issues

The prevention and treatment of malnutrition are not only matters of nutrition. They must be part of an integrated health policy aimed at universal health coverage and the respect of the rights of children and their families. To reach global nutrition goals, prevention must be at the heart of our work in order to reduce the incidence of malnutrition and to increase programme efficiency. Improving the approach based on the lifecycle in order to guarantee the inclusion of teenagers, pregnant women, breastfeeding women, new-borns under six months old and children from six to 59 months in prevention and treatment is a necessity which requires breaking down barriers between sectors of intervention and improving advanced strategies outside of health centres (but not independently of them), whilst respecting the strategies and protocols of ethical, scientifically-backed care. The consequences of a project approach, as legitimate as it might seem, must be characterised and discussed without censorship by the community of researchers, and include the exploration of different options. In sum, studies must have a horizon that is sufficiently detached from sponsors' demands and dominant trends.

Given that in the same territories, different forms of malnutrition coexist today (stunted growth, acute malnutrition or excess weight, and micronutrient deficiencies), it is legitimate to revisit the initial causal schema of malnutrition in order to give it more precision and better integrate certain issues, such as gender and cross-sectoral issues, or those linked to the climate crisis and the necessary evolution of the food system. In 2019, the EAT commission from The Lancet review[20] suggested focusing on the transformation of food systems and its link to health and ecosystem preservation actions. This is an issue for operational research, which was not addressed during the conference and which represents a challenge for the future of malnutrition. In methodological terms, the contributions of the social sciences must be promoted to avoid studies that rely purely on statistical data, which is certainly useful, but which does not provide a full picture of nutrition issues. Beyond giving value to local knowledge and solidarities, the social sciences enable a better understanding of projects' unexpected consequences, perceptions and issues of structural violence[21]. Finally, the social sciences can shed light on the risks linked to the multiplication of data collected in the context of programmes, and how to control this.

The efficiency and ethical relevance of the integration of families into community strategies, as in the Indian examples discussed here, have been proven in the case of acute malnutrition and issues of underweight populations. It is possible to draw at least two conclusions from this. First of all, there is a need for funders to consider projects in the long term, with a preliminary co-diagnosis so as to avoid predetermined programme solutions from the start. Secondly, and as a corollary, operational research has a role to play in the transformation of the current operational model, which first asks how the programme is perceived with success, in order to better answer the question of how the programme is co-constructed by those people who are directly concerned.

The results of the R4NUT conference in 2019 therefore laid the groundwork for the next one, which will take place in Madrid in autumn 2020, on the theme of "Local solutions based on actions with the populations".

Translated from the French by Juliet Powys

[20] See "Food in the Anthropocene: the EAT-Lancet Commission on healthy diets from sustainable food systems", 16 January 2019, https://www.thelancet.com/commissions/EAT
[21] See Voir Paul Farmer, *Pathologies of Power. Health, Human Rights and the New War on the Poor*, University of California Press, 2003.

Biographies

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Pascal Revault • Head of the Expertise and Advocacy department at ACF-France (Action Against Hunger) since August 2018, he's also a lecturer in social sciences at Paris 1 (IEDES) since 2008. He previously worked for 10 years as the head of operations for the Committee for the Health of Exiles (Comede) at Bicêtre hospital in France. Medical doctor, graduate in public health and social anthropology, he's committed since 1991 in universal health coverage and the transformation of caregiver-patient relationships, ecological health researches and responses (notably within the Research Group for Rural Development – GRDR); the protection of asylum seekers and refugees (UNFPA-WHO) and global solidarity among caregivers and Civil Society on the response to the HIV Pandemic (Ensemble pour une solidarité thérapeutique hospitalière en réseau – ESTHER), including HCV and HBV.

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