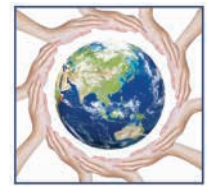


Winner — *Medical practitioner category*

Malnutrition: a global health perspective from a Timorese mountain



Malnutrition is an unacceptably prevalent and preventable global scourge

Her name was Rosa and she hailed from a small rural hamlet about 6 hours' "drive" from Dili in Timor-Leste, as the snaking, boulder-choked mountain pass permitted no more than a crawl past the rusted chassis and blown tires dotting the unforgiving terrain.

Rosa's story typified so many of Timor-Leste's young. A 6-year-old girl from a remote subsistence village, she presented to our outreach clinic simply hungry. The rudimentarily performed anthropometry and growth charting was arresting, but then so are national statistics. According to UNICEF, malnutrition is despairingly rife in Timor-Leste. About 58% of children are stunted, 19% severely malnourished with endemic micronutrient deficiency, with poorer outcomes still for rural dwellers. To benchmark, malnutrition in Timor-Leste eclipses that of Ethiopia and Malawi, traditional purveyors of poster-children for global hunger.

Surprising, then, that this mountainous district and Timor-Leste at large are not bedevilled by drought or infertility; rather the contrary. The causes of malnutrition are thus manifold and complex. They offer an instructive and galvanising tale on the merits and methods of combining clinical and global health responses to combat global malnutrition. In Timor, the Ministry of Health cites a panoply of local contributors, many transferable to the Global South at large: the abiding and disruptive legacy of war/decolonisation; extreme poverty with attendant low agricultural productivity and capital investment; overemphasis on staple mono-cropping (eg, rice) with reduced agricultural diversity/resilience; underresourced and inaccessible health services; inadequate sanitation, food hygiene and clean water; population pressures; insufficient public education regarding nutrition; and degradation of ecosystem services underpinning food production.

Malnutrition in Timor (and globally) represents the intersection of multiple demographic, agricultural, economic, ecological and political forces. It is foremost the preserve of the clinician to attend to malnutrition within the medical paradigm; that is, triaging at-risk populations, diagnosing individual cases, intervening early with nutritional supplementation, and serial monitoring to assess effectiveness. However, the contemporary clinician must also be cognisant of "big picture drivers" behind "small picture disease". Working in concert with population-based public

health approaches in sometimes unfamiliar disciplines with implications for malnutrition will yield the profoundest dividend. To this end, an approach that enjoins public health programs and clinicians in the four components of the food security equation is potentially gainful in addressing malnutrition; namely, the *adequacy, availability, utilisation and security/sustainability* of food supplies.

Adequacy of food is rightly the starting point for malnutrition. Targeted public health interventions can helpfully augment the argument for reform by entering the discourse on 1) local/international market integration; 2) education for farmers regarding sustainable agriculture; 3) loss of arable land due to urban encroachment and erosive farming; 4) land tenure instability stymieing investment; 5) loss of youth interest in agriculture; 6) prohibitive investment climates; and 7) research and development in country-specific technology/methods to increase yield.

"While focusing on the clinical dimensions of malnutrition is traditionally the province of medicine, the medical practitioner, whether physician or policymaker, must confront its socioecological and politico-economic determinants"

Second, public health and clinical responses might usefully assist with measures to render food more *available*. In Timor, like in much of the malnourished world, food, even if plentiful, is unavailable because of redistributive failure, poverty, market incentive for diversion and population pressure. Without adequate food hygiene, sanitation, refrigeration, road/rail networks and vehicle support, populations are confined to consuming what they can produce locally. Again, there is a role here for the public health professional and clinical outreach services to take opportunities to both agitate against and ameliorate infrastructure bottlenecks. Realistically, resource constraints are insurmountable and encouraging diversification to engender more self-sufficiency by remote communities, while preserving trade competitiveness in cash commodities, will help health outcomes. This is often (and understandably) limited by inducements for communities to divert arable land



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to cultivation of cash crops for Western markets; for example, the internal market in Timor for expatriates or, in Bolivia, international markets for traditional and highly nutritious superfood staples like quinoa.

This segues into another important dimension to the *availability* challenge, which should be part of the public health clinician's bailiwick: poverty alleviation through trade reform and development finance. Trade liberalisation instruments, such as the beleaguered Trans-Pacific Partnership, stalled Doha development round of global trade reform and parallel non-governmental organisations' trade campaigns, such as "Fair Trade", offer far-reaching potential to realise wealth transfers to developing country farmers. Public health campaigners and individual clinicians could laud trade liberalisation for its hunger-ameliorating potential. Internalising the costs for minimum labour and environmental standards into price signals for Western consumers (through Fair Trade) is also a salutary exercise in health advocacy for the same reason. Similarly, it is timely for public health campaigners to vocally interpose health imperatives into negotiations regarding global financing instruments for development and the soon to be minted Sustainable Development Goals. Population controls and contraception counselling represent another crucial but much more established method for clinical and public health approaches to easing demands on dwindling food stocks.

Appropriately *utilising* foods is a further component of the malnutrition challenge requiring intervention by the health care community at both public health and clinical levels. There is a sinister double burden of malnutrition in Timor and globally — obesity and non-communicable diseases coexist with hunger and micronutrient deficiencies. Much of this trend is the result of imported processed food and departure from nutrient-dense traditional diets, as well as more sedentary lifestyles. Here, clinicians must offer tailored dietary and lifestyle counselling opportunistically at the coalface. Public health approaches can assist through education programs and "Let's Go Local" food campaigns to address deficiencies in iron, iodine and vitamin A, aided by food fortification where feasible. Appropriate food handling and safety also looms large as markets fragment and contaminants from co-located industry concentrate up the trophic chain. Again, the case of Timor (and the Pacific) is illustrative: cyanide in cassava; cadmium in taro; mercury, histamine and ciguatera in fish; and *Escherichia coli* in fish. Foods can degrade and spoil in the tropics and infective hazards compound malnutrition but they offer prize opportunities for material intervention by clinicians and public health specialists alike.

Finally, food *security* demands attention by the broader health care community to put a dent in malnutrition. Farming less vulnerable to volatility in commodity or climate cycles is more sustainable.



Remote outreach clinic, Timor-Leste.

The latter bears closer attention. Climate change stands to disproportionately affect the Global South where nutritional adequacy is already marginal, with potential impacts all along the food supply chain. By instilling resilience and adaptive potential, malnourished populations can ensure surety and sustainability of food supply in the face of potentially catastrophic climate change. It behoves health care practitioners to underline this point as malnutrition is an unacceptably prevalent and preventable global scourge. It predisposes to diseases of reduced immunological and physiological reserve, and clinicians have a unique vantage point and political clout in their communities to assist with adaptation (and mitigation endeavours). Climate change portends a host of indirect sequelae ranging from increased (and potentially violent) competition for arable land, increased glacial melt flows with attendant water scarcity, loss of agro-diversity, increasingly frequent and intense weather events, sea water incursions into freshwater supplies, and more far-ranging food, water and vector-borne disease which will further imperil food supply and disproportionately afflict already benighted populations.

Rosa's story well demonstrates the arcane and complex aetiology of global malnutrition. While focusing on the clinical dimensions of malnutrition is traditionally the province of medicine, the medical *practitioner* — whether physician or policymaker — must confront its socioecological and politico-economic determinants to consign it to history.

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