

Maternal Indigenous and Artisanal Coastal Nutrition, the SDG Imperative: A Suggested Renaissance of Ethics for Research and Tertiary Education in the Anthropocene Era

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Abstract

Maternal nutrition is at the core of any principle-centered projection of Sustainable Development Goals. Without the developmental health of newborns – there is no quality future. Specifically, there are situations all around the globe where Indigenous and Artisanal coastal people suffer from maternal malnutrition inadvertently limiting future potentials in many locations that will be most challenged by climate change. Results from research with Artisanal Fisherfolk in the Philippines and analysis of harvest by the Canadian Inuit people are discussed in terms of the ethics of setting national as well as global education and research priorities.

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Introduction

The premise of this paper is that the Anthropocene Era represents a critical social responsibility challenge for the concept of tertiary education and research. The Sustainable Development Goals (SDGs) have somewhat provided a compass regarding societal needs and there is an opportunity to measure education against those goals. Priority setting is perhaps the penultimate form of ethics facing tertiary education. Globally, the approach to national programs, particularly research would need to go through a renaissance to rise above the disciplinarity and reductionism that currently dominate academe. Tertiary education is inherently meant to provide cognitive leadership, however maintaining global life support systems in the Anthropocene Era requires decisive academic action in support of society. Ecohealth is one approach that potentially combines a focus on the environment with that of human health, particularly through an optimal shift to enhanced ecocentric considerations¹. The current work considers two examples for problem-based learning challenges² and coastal Action Research³. The results represent examples for priority setting on maternal health that can best be addressed by a revitalized ethics consideration within the academic sector in one highly developed country and in a less developed setting. Although these two settings are extremely different, comparing Philippine resources use⁴ to that of the Inuit⁵ indicates that their dependence upon the marine environment is similar (30+ kg/person/year) and in both cases the coastal dependence of the people place them at high risk due to climate change and sea-level rise.

In April of 2019, the International Institute for Sustainable Development, through their SDG hub and in partnership with Vertigo Ventures scheduled to put forward their initial areas of focus through the company's Innovation and Impact Summit convening in Daejeon, South Korea, from 2-4 April 2019. Critically the 11 of 17 SDG selected left out Goal #2: Zero Hunger, yet included Goal #3, Good Health and Well-Being⁶. The selection of the target SDGs by Vertigo Ventures and the Times Higher Education was indicated as a focus on the SDGs as those "most relevant to universities". At first glance this appears to be an effort to focus on the

nebulous, while avoiding the critical. The suggestion herein is that consideration should be given to hunger and nutrition as priorities. Good health and well-being is impossible when there is hunger and more specifically when there is malnutrition. Clearly there could be a lot of research and academic activity justified by a focus on the concept of well-being; however the argument should be considered that status of life support systems in the Anthropocene Era somewhat demands research priority setting as an ethical consideration. There is also a strong international movement regarding this need for universities to be more relevant to societal goals⁷, rather than the other way around. Further, if we consider for a moment the curve demonstrating the rise in CO₂ in the atmosphere, which is generally considered a prime factor in destructive climate change, the global increase in tertiary education follows a similar curve. Perhaps critically, we need to be considering whether universities and tertiary education in general are part of the solution to the global environmental challenge or merely another symptom of the problem.

The current work considers the Indigenous intake of marine resources of the Canadian Inuit culture and the Artisanal Fisherfolk of the Philippines in terms of their status and the need for focused maternal nutrition transdisciplinary research. These are just two examples of the upwards of one billion small-scale coastal fishers and their dependents that are in peril during this Anthropocene Era. The Inuit have specific and inalienable rights under the United Nations Declaration of the Right of Indigenous Peoples⁸ and are hugely dependent upon marine resources for their survival^{5,9}, yet Canada appears to not have any real focus on the survival of this culture and the environment it depends upon, based upon a paucity of dedicated university programming and research^{5,9}. The less developed country of the Philippines is also critically dependent upon coastal fishers for their protein security, yet these considerations are generally excluded from what is in many ways, a well-developed in-country academic framework. Significantly, the Philippine system currently excludes coastal resource management (CRM) and related food security, creating a local government challenge for skilled expertise. Similarly, international funding that pours into the country in support of

biodiversity conservation has not been able to penetrate this need for in-country applied education. In the current work, I outline what we know and don't know about maternal protein malnutrition in these two under-developed settings; the Inuit of the Canadian Arctic and the Artisanal Fisherfolk of the tropical Philippines, and point out some potential specific lines of Action Research priority setting.

Methods and Results

Methods and results are discussed in this section to demonstrate the current status of the problems, the solutions and the approach within an Action Research design to the management of change³.

Inuit of the Canadian Arctic

Virtually all Canadian Inuit settlements are coastal and food security is dominated by the Indigenous harvest. Protein access by the Canadian Inuit people is primarily limited to coastal fisheries and to a lesser extent localized caribou harvest. Records are generally not kept with regard to food security, but rather as harvest data based upon individual species. The current work summarized all small-scale fish harvest data to reconstruct the catch between 1950 - 2000⁹. This included a significant decline of fish harvest for feeding dog teams (Figure 1) in the later part of the 20th century. Greater than 95% of the catch was Arctic Char⁹ a *salmonoid*. Estimating the protein content of salmon at approximately 20% by weight it is possible to determine the per capita marine protein availability from fish harvest (Figure 1) and convert that to daily consumption for a 50kg maternal person. In addition to this is the consumption of caribou as mentioned above, as well as marine mammals⁵. However marine mammal harvest is thought to primarily involve fats with an unknown and likely limited contribution to protein requirements. The price of protein imported from Southern Canada is generally considered to be beyond the reach of many Inuit people and is not considered in the current work. The international reference for adequate protein consumption for maternal health is approximately $1.22\text{g} \times \text{kg}^{-1} \times \text{d}^{-1}$,¹⁰ three times the primary protein potential of approximately $0.35\text{g} \times \text{kg}^{-1} \times \text{d}^{-1}$ indicated in the current results.

Philippine Artisanal Fisherfolk

In the Philippines, nutritional stunting is endemic, however nutritional wasting has been found to be primarily coastal¹¹. Studies in Africa have found that where stunting and wasting are combined there can be a 5-11 times increase in childhood mortality¹². It is reasonable to consider that there are no substitutes for amino acids and protein; nor their role in immune system proteins, brain, body growth etc. The current work focused on applying the international reference of protein requirement for maternal health¹¹ as noted above in the Arctic section, which has also been accepted by the Philippines as their reference point. Preliminary work reported through the World Health Organization and their Partnerships for Newborn and Child Health indicated that maternal Fisherfolk in one province were getting less than 20% of that level of protein intake¹³. This situation appears to be particularly critical during typhoon season when fish access is limited. Using an Action Research design, a problem based learning approach is being used to empower women and their communities to respond to immediate maternal malnutrition and promote the development of Marine Protected Areas (MPA) that are a reflexive response to maternal malnourishment¹³.

Discussion

The two examples in the current work provide some indication of the range of responses required in tertiary education research, if global hunger, specifically maternal malnutrition is to be given due attention. Considering the Inuit of Canada, there is a need for community-based seven-day diet and seasonal maternal protein intake studies. Some communities may have significant access to caribou as a protein source, while others may not. The need for an educational approach to community-based food security^{5,8} is extreme in the Canadian Arctic due to the isolation of the communities and a lack of affordable transportation for protein from southern Canada sources. In the Philippines there is a tendency to take the marine sources of protein somewhat for granted as there is no systematic approach to manage coastal resources nor goals for maternal protein intake requirements. Thus, it is the national tertiary education system that needs to respond to the related demands for protein security that

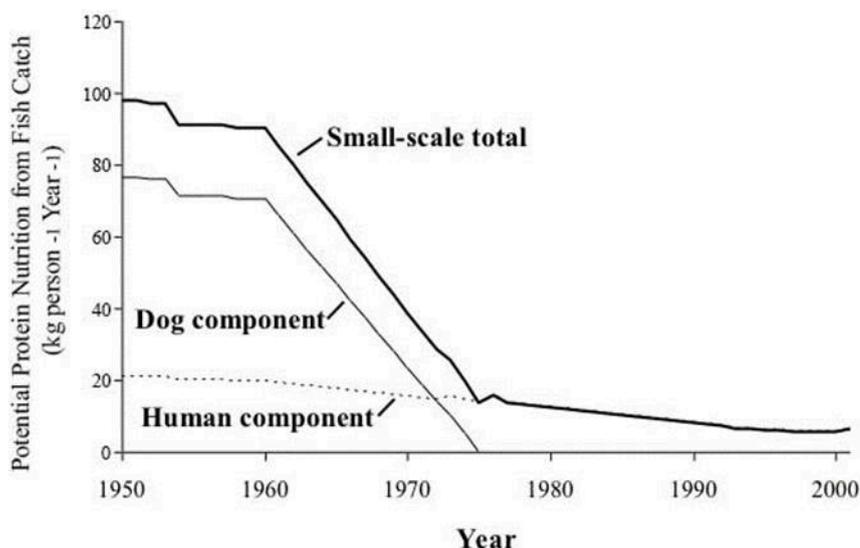


Figure 1. Potential Canadian Inuit Protein Intake from Fish Catch (Booth and Watts 2007) allocated to human consumption

concern the 100 million Filipinos. The Philippine system does not have any programming on coastal skills for determining and managing food security. However, the 9001 ISO certified government organization known as the Technical Education and Skills Development Authority (TESDA) could respond to this need, if there was a path defined to work around their focus on the for-profit sector. Currently, it is up to the non-government organizations to seek funding for program development on CRM, inclusive of food security. In both the Canadian Arctic and the Philippines there is the need for a renaissance in tertiary education activities to meet maternal nutrition goals for coastal people.

Globally, underlying significant questions need to be asked, for example; if world hunger is not of primary relevance to universities – what exactly is the relevance of universities themselves? There is now a movement to have one university identified as a center for each of the SDGs¹⁴. However, in a more general sense, should we not be asking what each university is doing for each of the SDGs? Or even more deeply – if the functions of tertiary education do not relate to SDGs – what is the justification for providing tax dollars? The Inuit people of the Canadian Arctic and the tropical people of the Philippines are comparable relative to what we know about their nutrition and specifically regarding

maternal needs. However, the current work does not focus on extensive details reported through a standard reductionist model. The goal herein is also not focused on high-level policy decisions by government, but rather on setting priorities for problem-based transdisciplinarity maternal nutrition research as an applied educational ethics issue, based upon the management of change through CRM Action Research³. Through these examples specific points have been outlined regarding a resetting of the academic compass and specific priorities through maternal health for Indigenous and Artisanal coastal cultures. The general suggestion herein is that tertiary education must become more reflexive in the Anthropocene Era to maintain a leadership role in society and justify the contributions of the taxpayers within society and the SDGs.

IISD and Vertigo Ventures have concluded that the 11 SDGs selected represent the goals that are 'the most relevant to universities'. Critically, these considerations need to be inverted and the question asked, *what functions of universities are relevant to the taxpayers that pay for them*, inclusive of our common global future. The SDG provide a framework for that evaluation and the nature of a reflexive response faces increasing future challenges as a result of climate change. The Anthropocene Era is very negatively

highlighted by the domination and destruction of the life support systems of planet earth, by people. While the rise of global CO₂ levels is well documented, it is perhaps of note that a similar rise has occurred in global attendance of university, for example. The question must be asked, *Is tertiary education and research part of the solution or part of the problem?* If we consider rising CO₂ levels as a form of global cancer, should we not also question the heightened drainage of global resources into research and universities as a similar cancer? Principle-centered university functions need to begin with not only Zero hunger, but proper nutrition; critically, maternal nutrition. Far too often, international measurements of hunger are focused on caloric intake while people the world over are starving for adequate protein. While the entertainment world is currently buoyed by the *zombie era*, societies the world over have, by sheer neglect been ignoring the real life zombies that can be the result of pregnant mothers and children growing up with inadequate protein. We do not need more research to know that there is no substitute for amino acids and that these form the basis for the immune system, cognitive function and all forms of proper child development. We do however need reflexive Action Research with a focus on meeting a global standard¹¹ for maternal protein. Since the release of the Brundtland Commission Report over thirty years ago, we still have not determined the role of science in the concept of Sustainable Development¹⁵ and related goals. Given the dawn of the Anthropocene Era, perhaps science has come to a crossroads as to whether or not to be part of the solution – by setting priorities, or merely provide witness to the demise of life support systems. Maternal nutrition should be a primary global priority with a focus in every country, dedicated tertiary education systems and any discussion of SDGs.

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