

Health promotion of sustainable diets: key for obesity epidemic and environmental sustainability

Abstract

Empirical studies reviewed serious problems of obesity epidemic regarding global aspects of food system and the current unsustainable dietary trends between food, health and environment are now being recognized. Despite livestock products provide one-third of humanity's protein intake, however they are a contributing cause of obesity and also the top two or three most significant contributors to the most serious global environmental problems that intensified negative impacts on our eco-environments and produced a substantial greenhouse gas source that driving climate change with further adverse effects on the food production systems. This paper synthesized from literatures and research studies that generated within the context of 'Sustainable Diets' is in an attempt to foster opportunities for healthful practice, choice and life-style behaviour in support of the ecological public health concept associated with connections between disease burden of obesity epidemic and its related rising NCDs under these interwoven relationships of food, health and environmental sustainability concerns. Health professionals should recognize the needs for expanding their professional roles under this paradigm shift by reconceptualizing holistic vision on global health amongst humans, animals and the planetary. Education of this evolving role as integral part of virtuous trends of dietary transition to all disciplines of nutritional health, medicine, nursing and other allied health field are indeed absolutely indispensable for supporting sustainable development in health towards the 21st century.

Keywords: sustainable diets, obesity epidemic, environmental sustainability, ecological public health

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Abbreviations: WHO, world health organization; NCDs, non-communicable diseases; FAO, food and agriculture organization; HAEI, human-animal-ecosystems interface; GHGE, global greenhouse gas emissions

Introduction

Human health and diseases are determined by a range of many complex factors, including behavioural, biological, genetic predisposition, socio-economic, psycho-social, environmental opportunities, as well as immense challenges forced on the ecological perspectives on food and the eco-environments, including aquaculture, agriculture and the entire food systems.¹ As the World Health Organization (the WHO) reported more than 1.9 billion adults were overweight globally,^{2,3} the diet-related obesity health issues, together with obesity-related non-communicable diseases (NCDs) also come at great cost to global community and are arising in line with the current dietary trends from food production systems, which are further implied harms to our health and the environment.³ Food and Agriculture Organization of the United Nations (FAO) confirmed that in the past three decades have seen major shifts in human diets, with "the share of animal products has risen, while that of cereals and other staples has fallen. And within the meat sector there has been a dramatic rise in the share of poultry and, to a smaller extent, pig meat".⁴ The consumption of animal-sourced food products by humans is one of the most powerful negative forces affecting the conservation of terrestrial ecosystems and biological diversity, and in fact, the "livestock production is also a leading cause of climate change, soil loss, water and nutrient pollution, and decreases of apex predators and wild herbivores, compounding pressures on

ecosystems and biodiversity".⁵ In addition, emission of methane from enteric fermentation of livestock production has been predicted as a substantial greenhouse gas source.⁶ Despite livestock products provide one-third of humanity's protein intake, however they are a contributing cause of obesity as well as the top two or three most significant contributors to the most serious global environmental problems that intensified negative impacts on our eco-environments and produced a substantial greenhouse gas source that driving climate change with further adverse effects on the food production systems.⁷

Nutrition has long been recognized as an essential factor to our human health, and diet is one of the prime contributors that can be linked to a range of risk or health indicators for our well-beings, and the WHO affirmed that poor nutrition can lead to reduced immunity, increased susceptibility to disease, impaired physical and mental development, and reduced productivity; and food simply is the necessity for the survival of our lives.⁸ Especially, the global population growth is expected to reach more than 9 billion by 2050, which raised even more environmental concerns, including climate change that is further placing greater pressure on our planet's finite natural resources, together with the food system of the future must meet the nutritional requirements for the health of our future generations, and therefore the sustainability of natural ecosystems in ways that have to be economically, socially and environmentally viable for such expected increasing demands for food, fresh water and energy, etc.⁹

Currently, the global dietary trends are a problem from both a public health and a sustainability perspective.³ The challenges of improving the food system in this 21st century will require systemic

approaches that take full account of social, economic, ecological and evolutionary factors that are currently under debate on consumption of a healthy and safe diet, food security, animal welfare, and preserving the environment and its resources; and therefore efforts to build human capacity are needed beyond a single dimension.¹⁰ As the growing academic recognition of environmental degradation and loss of biodiversity that directed international concerns to sustainability in all its forms, including diets with the linkages among agriculture, biodiversity, nutrition, food production, food consumption and the environment.¹¹

This paper studies and synthesis the empirical knowledge and concepts being reviewed and generated within the context of “Sustainable Diets” for its significance of environmental sustainability concern as the call for action in the international trend of collective understandings in the scope of this new nutritional knowledge on the fundamental focus of how the complex set of interactions amongst the range of underlying factors and conditions that tackling global health and environmental challenges such as the epidemics of obesity and its related NCDs, in addition to the ecological dimensions of environmental sustainability and its impacts on degradation of ecosystems, climate change; and other health threats such human-animal-ecosystems interface (HAEI) and zoonotic diseases being imposed by the food producing systems. As the WHO and FAO further indicated that the global food system is broken, risks of under nutrition and overweight are now problems affecting people worldwide,¹² as well as food security and nutrition with diets shift and the environmental consequences, all of which is one of the greatest global challenges.⁴

In this paper, the recommended health promotion of sustainable diets and protection of environmental sustainability, in fact, are in an attempt to create and foster opportunities for healthful practice, choice and life-style behaviour in support of the ecological public health concept associated with these changing circumstances, which require our understanding of underlying determinants on the connections between disease burden of obesity epidemic and its related rising NCDs. The need for health professionals to take up the professional role of advocacy under this paradigm shift on such importance of health promotion through an integration of knowledge and action in this interwoven areas of food, health and environmental sustainability for the holistic vision as the ecological public health model in the 21st century towards global health amongst humans, animals and the planetary is indeed absolutely indispensable.

Health threats: obesity epidemics

Health impacts on nutritional health require comprehensive understanding of the multiple influences on eating behaviour and the interactions among these determinants of food and environment. UNESCO stated that we must have food in adequate quantity, quality and variety to meet our energy and nutrient requirements to be healthy and active; and further indicated that more than one billion people worldwide were considered to be undernourished in 2009, and around a quarter of all children under 5 years of age suffer from acute or chronic symptoms of malnutrition; whereas there are 1.1 billion people in the world who are over-nourished and over-weight almost rival the number who are under-nourished and under-weight.¹³ Indeed, over-eating and obesity are now become a global health issues. As “the present patterns of food consumption are posing a significant and rising threat to public health through obesity and poor nutrition, especially in affluent societies, and such major negative consequence

of the ‘Nutrition Transition’ has been the creation of new patterns of NCDs”.¹⁴

The occurrence of this nutrition transition is the shift in dietary consumption and energy expenditure that also coincides with the changes of economic development and demographic, which described as “transition from traditional to more Western ways of life (increased food energy density and a sedentary lifestyle) seems to help explain the relatively rapid increase in obesity rates.”, while the diet changes markedly as a population’s wealth increases as the global nutritional transition with rising animal foods and sugar intakes and a fall in unprocessed cereal and vegetable intakes.¹⁵ The global transition to a world of fat in the dietary and activity pattern changes that shifted in the concept of the nutrition transition towards diets of highly refined foods and of animal source products containing high levels of saturated fats is occurring in many countries of the Asia Pacific, with the increased dietary energy intake associated with this nutrition transition has contributed to the rise in levels of obesity and associated NCDs.¹⁶

Paradoxically coexisting with under nutrition or malnutrition, an escalating global epidemic of overweight and obesity, as a major risk for serious diet-related NCDs, with its health threats range from increased risk of premature death to serious chronic conditions, including diabetes mellitus, cardiovascular disease, hypertension, high cholesterol, infertility, musculoskeletal disease (e.g. arthritis) and stroke, as well as certain forms of cancer, including leukaemia, breast and colon cancer.^{17–19}

In fact, the WHO has classified obesity as a disease whose consequences have a lasting impact on communities, nations and individuals not only today but across future generations, in addition to its unsustainable consequences under the three interdependent and mutually reinforcing components of sustainability as identified by the United Nations, namely - social development, economic development and environmental protection.¹⁹ In view of the fact that obesity has come to the forefront of public health concerns, there is growing interest in finding ways to guide consumers’ food choices for better understanding of nutritional benefits for their long-term health.²⁰ Especially, human obesity has reached pandemic proportions, as more than 1.9 billion adults worldwide are now overweight, with 600 million are classed as obese and around 3 million people die each year as a result of being overweight or obese; and this is a serious problem for the entire global community, hence sustainable diets should be the solutions that can offer clear co-benefits for our health along with environmental sustainability.³

There are a wide variety range of underlying and collective determinants of dietary practices and human health that have significant influences on the food production system, as well as the environmental consequences. The deteriorating quality of environment poses the threats include increasing exposure to infectious diseases, water scarcity, food scarcity, natural disasters with intermediaries connecting the change in the ecosystem and human health, for instance, impacts of environmental changes can seriously affect the causal chains through climate variability and extreme weather influence human nutrition, which are complex and involve different pathways.²¹ In fact, “food and environment on our human health is always a complex issue with many factors interacting and relating to each other as indicated all the way through air pollutions, water pollutions, misuse of antibiotics and growth hormones, over-fishing, abuse of chemical usages, food fraud and overlook of food animals and poultry welfares, as well as other determinants of environmental

contaminants, climate change and food-producing systems, etc.”¹ As “the environment shapes human nutrition and, vice versa, how what we eat reflects how we treat and think of the environment”, and therefore, “theoretically, scientifically, and practically, nutrition needs to put the environment at centre stage in the twenty-first century” in order to maintain mutual benefits of sustainability for both human and the environment.¹⁵ Hence, identifying gaps in knowledge from the ecological perspective on health determinants of food and environment by synthesizing the current state of knowledge as highlighted in a great variety of actual and potential impacts of the dietary trends in relation to food production systems will have a significant implications on the essentiality of environmental sustainability, including climate change and those subsequent prevailing climate conditions are indeed of great importance in influencing the consequential risks to our human health.

Ecological perspective on health determinants of food and environment

New nutritional knowledge on the protective role of maintaining the environmental sustainability, including its relation in food production system is of great significance, as FAO indicated that livestock have a considerable impact on the environment such as deforestation, overstocking land with grazing animals can cause soil erosion, desertification and the loss of plant biodiversity, and their wastes can also pollute water supplies.⁴ The meat consumption intensified negative impacts on our health and environmental sustainability in all aspects of human life and humanity’s future survival prospects include excessively high contributions to global greenhouse gas emissions (GHGe), land and water pollution and depletion, antimicrobial resistance problems, and all of which are further imposing the vicious cycle to both our health and the environment.²²

The problem with the food system today is destroying the environment upon which future food production depends.²³ The entire world’s food system leads to adverse environmental consequences that can be grouped into three categories, (i) environmental contaminants/pollutants, (ii) depletion and replenishment of natural resources, and (iii) population and community disruption,¹⁰ which further raised global concerns about those collective determinants that correlated to food and environment on our health. For instance, the present rate of greenhouse gas accumulation from food production places enormous demand upon our natural resources, with disastrous effects on global GHGe, which is also driving climate change with additional negative impacts on food, health and the environment.^{5,7,9,24} The observational evidence of those impacts of the climate change threats or climate-related ‘health impact’ to the population health and well-being that take account of a variety of direct, indirect and systemically mediated health effects, include examples of extreme weather events: storms, floods, and droughts that create impacts on population health such as famine, malnutrition and under-nutrition, spread of vector-borne diseases and other infectious diseases as well as the consequences of large-scale adverse economic effects due to reduced human and environmental productivity.²⁵

Moreover, the climate change may also affect food systems in several ways ranging from direct effects on crop production, to changes in markets, food prices and supply chain infrastructure, with food security being threatened.²⁶ As the WHO affirmed that environmental factors are a root cause of a significant disease burden, including climate change that impacts on more extreme weather events, changed patterns of vector-, water- and food-borne disease and effects on agricultural production, other environmental risks such

as malnutrition;²⁷ as well as “a disease-ridden environment, one that is burdened by malaria, worm infections, and other terrible infectious diseases, can be a serious impediment to the diffusion of economic growth”.²⁸ The same concern of this inflationary environment is also raised if any severe crop failure, due to drought or disease, which would have profound ramifications for the food security of the world’s poorest and most vulnerable, including the 850 million people who are already chronically hungry.²⁹

The world needs nutrition accountability, as food insecurity, hunger, starvation and malnutrition affecting 868 millions of the poor and children, whereas the excessive food waste imposed even more environmental problems. For example, the landfill problems with food wastes in Hong Kong were over 800 tonnes per day in 2012.¹ In fact, FAO concluded that about one third of the food produced in the world for human consumption (around 1.3 billion tonnes) gets lost or wasted every year.²⁹ As “our global population grows, urbanizes and becomes wealthier, it is demanding more resource intensive, energy rich foods – notably animal products, which are potentially damaging the environment further and exacerbating problems of obesity and chronic diseases”, in fact, the distinction between so-called “under-nutrition” and “over-nutrition” was increasingly blurred with a new spectrum of nutritionally-related disorders and diseases emerging;²³ particularly while about half the global population is inadequately or inappropriately nourished with the combined burdens of hunger, micronutrient deficiencies as well as further health threats imposed by environmental health risks such as landfills problem with excessive food waste, water pollution, pesticides, human-animal-ecosystems interface and zoonotic diseases, etc. are also in the list of our concerns regarding global health from the ecological public health perspective.

The prospect sustainable dietary patterns are considered within the larger framework linking sustainable diets with environmental sustainability in achieving population health and global sustainability in multiple aspects of the environmental, economic, and social dimensions of sustainability, as well as concurrently address the global challenges of overconsumption and obesity, and underconsumption and food insecurity.⁹ Echoed to such situations of “food shortages, rising food prices, shifts towards the consumption of cheaper less nutritious foods based on staples, refined ingredients, sugar, fat and salt, with little real biological variety generated by plant foods and with fish stocks in decline or, at least, more contaminated”,³⁰ which also added further adverse effects as an unsustainable dietary patterns. As a result, it is crucial for reconceptualising health promotion of sustainable diets for ecological public health, and therefore health professionals should recognize the needs for expanding such significant professional role of advocacy under this paradigm of the food, health and environmental sustainability per se.

Reconceptualizing health promotion of sustainable diets for ecological public health: role of health professionals

From the perspective of old public health to new public health model, and now expanded to the current ecological public health model that aims to improve ecological sustainability by creating conditions with broader perspective and multi-dimensional view on preventing diseases by addressing the root causes of disease.¹ UNESCO stated that a sustainable future with the holistic view of health will be populated by healthy people, living in healthy communities, within the resource opportunities and limits of healthy natural environments, as they are inextricably linked at global scales.¹³

The current evolution of diets are rather in an unvirtuous circle that are shaping and contributing to an increasingly unsustainable food system, with considerable changes in diets worldwide towards more animal-based products.³¹ The observed shift from a plant based diet to a diet rich in animal products, particularly in emerging economies that worsening problems in global, regional and national food and health security by imposing further adverse effects on environmental degradation associated with relatively high GHGe from animal source food production, as livestock are major sources of GHGe, plus with greater consumption of natural resources and fishery exploitation are also considered unethical.³⁰ Food systems throughout the world are currently unsustainable,^{24,31} as “there is abundant evidence that we are undermining the ecological foundation of the world food system. Some of the causes or threats are longstanding (over-fishing, agricultural practices that lead to soil erosion), but some are new or growing (climate change, coastal dead zones, competition for land between food and biofuels, competition for water between irrigation and other water use sectors)”.¹⁴

In the role of public health has a history of responding to environmental threats to population wellbeing, and also the problem of environmental degradation through its large ecological footprint affecting human health, the concern of ecological public health is “in the direction of momentous demands and focuses to support the sustainability of our eco-environments and human communities for our ongoing existence on this planet earth, inter alia with issues on global environmental hazards to human health such as climate change, stratospheric ozone depletion, loss of biodiversity, changes in hydrological systems and the supplies of freshwater, land degradation and stresses on food-producing systems”.¹ As climate change is part of the challenge for future population health and a broader view of the future sees sustainability as the goal, and includes looking at water, food, ecosystems, as well as food consumption and production.³²

Most research on interventions is concerned with either health or sustainability objectives, but evidence on interventions designed to achieve co-benefits is comparatively scarce. In fact, the sustainable pathways for such co-benefits should be collaboratively towards understanding and promoting awareness and experiences of contemporary environmental changes escalate in profound ways under the illustrated sustainability principles in relation to the food systems and the environmental sustainability as well as the actual and potential consequential effects on our health and intensified environmental threats.³ Therefore, it is strongly recommended better knowledge of the relationships between diets and the sustainability of food system, and proper tools and indicators taking into account the human and food systems dimensions of sustainable diets are very important to determine priorities for action, with these double dimension of individual sustainability for health and of impact on global sustainability, are both a driver and an objective of sustainable food systems.³¹

As the expected climate change will create both communicable and non-communicable health challenges depending on the underlying health determinants panorama, and believed for the most fundamental health threats, only climate change mitigation will achieve the necessary protection of good population health for current and future generations.²⁵ This is especially so, as the global population growth is rapidly expanding and expected to reach more than 9 billion by 2050, together with environmental concerns, which includes climate change that is placing greater pressure on our planet's finite natural resources, as the food system of the future must meet the nutritional requirements for the health of our future generations, for these reasons, we will

depend on the sustainability of natural ecosystems in ways that are economically, socially and environmentally viable for food choices that can form sustainable food systems.⁹ As a result of such significant mission, we need to consume more ‘sustainable diets’, which is one of the approaches to address environmental concerns sufficiently and tackle the twin problems of dietary insufficiency and excess, as sustainable diets that have lower environmental impacts, and are healthier.²³

It is an evidential facts that a growing body of academic research warns of the risks to society of not concentrating on meat consumption, as it will risk us further breaching our ‘planetary boundaries’ in terms of those atmospheric GHG concentrations, disruption of nitrogen and phosphorous cycles, freshwater depletion, biodiversity loss with transgression that may trigger abrupt and possibly catastrophic environmental change; as the studies also indicated that on high income countries such as the UK and US generally find an association between higher levels of meat eating and increased obesity and chronic diseases.²³ For that reason, it is suggested that reduction of “meat consumption patterns could significantly reduce the ecological effects of the food system. The consumption of meat accounts for a large proportion of the ecological footprint of consumers. Therefore reduction of meat consumption is important in making more sustainable food choices”.¹⁹ In order to minimize the adverse impacts on climate change, the fundamental preventive strategy is simply by significantly reducing global GHGe, especially long-acting carbon dioxide (CO₂), and by increasing the uptake of CO₂ at the earth's surface,³³ and as a consequence the “mitigation strategies should aim to reduce the carbon footprint from the whole food sector through sustainable food production, sustainable food consumption, and food waste reduction”.³⁴

Thus, it is recommended the skills and knowledge of health professionals can be used to address climate change and to support communities to adopt sustainable lifestyles by increasing articulation of health promotion action that will positively shape this period of sustainable dietary trends in transition by truly embracing environmental sustainability principles to educate and advocate the individuals and communities to understand the health consequences of climate change and by this means to encourage sustainable living,³² under this context with the concept of ‘Sustainable Diets’.

In fact, the term of sustainable diet was first introduced in 1986 by Gussow and Clancy, in which they have indicated that the profession of nutrition educators have turned to models and theories from a variety of fields and through which have been generated almost entirely at the interface between nutrition and medicine by a concern over the relationship between diet and health, as well as with concern for the resource costs of our food choices and those demands are having an increasingly adverse effect on the natural resource base and the food self-reliance of poor countries with the existence of hunger in various parts of the world.³⁵ Despite the notion of “sustainable diets” was proposed in the early 1980s, with dietary recommendations that would result in healthier environments as well as healthier consumers, however, this concept was being neglected for many years.^{11,36}

With increasing knowledge and understandings on sustainable diets as a driver of sustainable food systems, because health and environmental problems associated with the food systems are highly interconnected, and therefore, a holistic ecological public health perspective as the synergistic solutions are required for enhancing amongst humans, animals and the planetary health.^{1,9,14,37} This rising challenge of changing patterns of food consumption on the scale needed

to have an impact at the global level is a complex task, and believed what is good for public health is often good for the environment and subsequently suggested life-style behaviour can be influenced through many different approaches for encouraging healthy and sustainable diets, as the current global dietary trends are a problem from both ecological public health and sustainability perspective.³

The concept of 'sustainable diets' is now gaining increased attention across the globe, with respectful of biodiversity, ecosystems and about climate change, and the concept of sustainable food systems interconnect with ecosystems and the use of natural resources in ways that are environmentally, economically, socially and culturally sustainable, and are critical for achieving healthy nutritional quality of dietary patterns as a fundamental requisite when assessing environmental impacts of diets under a framework of sustainable diets,⁹ in which "sustainable diets are those diets with low environmental impacts which contribute to food and nutrition security and to healthy life for present and future generations",³⁶ and which is also supplementary echoing to the Brundtland Commission's classic definition of the concept of sustainable development that "is development that meets the needs of the present without compromising the ability of future generations to meet their own needs".²⁷

As a result of all such concerns, this concept of sustainable diets are being significantly acknowledged and should also be widely promoted as one of the most important way in achieving goals of nutritional health, sustainable food system and reducing certain environmental problems, as the sustainable diets are "those diets with low environmental impacts which contribute to food and nutrition security and to healthy life for present and future generations. Sustainable diets are protective and respectful of biodiversity and ecosystems, culturally acceptable, accessible, economically fair and affordable; nutritionally adequate, safe and healthy; while optimizing natural and human resources", which is the recent and professionally endorsed definition for the concept of sustainable diet with the hopes and focuses on this shift in the food production landscape in our diets³⁶ that can greatly reduce the impacts of animal product consumption by humans on the natural ecosystems and biodiversity while meeting nutritional needs of people. In fact, this is proposed as one of the remedial solutions by reducing demand for animal-based food products and increasing proportions of plant-based foods in diets, and replacing ecologically-inefficient ruminants (e.g. cattle, goats, sheep) and bushmeat with monogastrics (e.g. poultry, pigs), integrated aquaculture, and other more-efficient protein sources⁵ from plant-source proteins. As many studies have also shown that the dietary protein sources play a direct role in human health and disease and environmental impacts, plant-based diets have long been associated with lower risk of cardiovascular diseases, certain cancers, hypertension, obesity, inflammation and metabolic stresses, and diets high in plant-source proteins are also associated with lower risk for chronic diseases, as compared with diets high in animal-source proteins.³³ As a result, a diet low in meat, high in plant foods and low in processed foods is not only healthier but more favourable to the environment, with which are being encouraged as the healthy eating challenge.³² For all these reasons, the health promotion of "Sustainable Diets" is recommended as the key for obesity epidemic and environmental sustainability from the ecological public health perspective.

In light of these new orientations, the role of healthcare professionals should adopt and commit to a new way of thinking about health in a broader dimensions of the continuum and those

related determinants of health, as in the vision of 'One Health' notion towards ecological public health focus for the global health, specifically on the perspectives of sustainability in relation to food, health and the environment. As supply and demand works both ways and we must be aware that our food choices ultimately impact more than just ourselves; there are many studies and reviews supported that plant-based diets are best for both health outcomes and the environment.²⁴ In the 21st century, healthcare professionals' role as promoters of health is more complex with the expanding concerns as a new direction in sustainable development for health promotion and disease prevention in the healthcare fields of nutritional health, medicine, nursing and other allied health professionals that signaled the needs for reconceptualizing health promotion of sustainable diets for ecological public health under the paradigm shift onto these new orientations for global sustainability.

Discussion

A conceptual and knowledge synthesis from the empirical studies and reviews in this paper on the wide range of contextual factors regarding a synergistic relationship between health, food and environment in a shift to a less animal-based and more plant-based diet towards the trends of sustainable diets in support of health promotion for ecological public health and the crucial expansion of this professional role of advocacy for health professionals in the direction of ecological concerns for health sustainability, which further reinforce the significance of nutritional education with these new orientations of principles. Nevertheless, "nutritional education has now been shown to be a hopelessly inadequate approach for dealing with the population's public health problems".¹⁵ Food as a topic hardly features in our traditional medical and nursing education, in which medical and nursing students learn about the nutritional components of the balanced meal and the effects of various deficiencies, but they are often lack of information regarding the global aspects of the food system and dietary difficulties in relation between food, health and environmental sustainability.²⁹

In order to deliver effective adoption and/or change of the dietary and food choices towards sustainable diets and its related interventions, healthcare professionals will need a range of education, resources, knowledge and skills to enable and facilitate such 'sustainable' change to adopt healthy dietary habits as a new initiative to promote the concepts of sustainable diets and its interrelated rationales for environmental sustainability as the support of this sustainable dietary lifestyles in transitions. And therefore, we need a revolutionary re-education to all health professionals about the role that food can play in the health of both people and planet, guiding us in our transition to sustainable healthcare. For example, the concept of health promotion in nursing education should also be redirect from being disease-orientated towards a health promotion ideology,³⁸ as this redirection should be developed to emphasize the evidence base concerning the role of health promotion in general practice as a growing field and general practice for the public health, and therefore academics also need to work together for more effective health promotion education under this context into the curriculum of all health studies.³⁹

Education should be consistent and in line with these new orientations and the principles of sustainability for ecological public health concern, and therefore all health professionals from disciplines of nutritional health, medicine, nursing and other allied health field will need additional education and support to equip their expanding role in this direction and forms of practice in advocating sustainable health

through these new orientations of health promotion of sustainable diets for both our health and the environmental sustainability for our future generations as well. It is believed that health professionals are well placed to contribute proactively to the reversal of the current negative dietary trends and further support a healthy diet and sustainable diet in environmental terms, to advocate this proposed healthy eating practices as dietary interventions of sustainable evolution for people and planet,²⁹ through reconceptualizing this recommended health promotion of sustainable diets for the global concerns of ecological public health.

Conclusion

An overview of current knowledge on these collective health determinants of sustainability, as diet plays a crucial role not only in food and nutrition security for human health, but most importantly is the sustainable diets respect and protect biodiversity and ecosystems for our environmental sustainability in the long run, as sustainable health has many dimensions, among which food and nutrition is a wide spectrum of global concerns, and it is also an ethical issue as reflected in the UN Universal declaration of Human Rights which includes the right to food for health and well-being as part of the larger security agenda and merit corresponding global attention, additionally emphasizes planetary, human, health and food security.³⁰

As evidence of the science shown that this planetary system is under stress mostly due to human activities: such as the food production systems, especially the livestock impact negatively on the eco-environments by greenhouse gas emissions, land degradation, deforestation, pollution, habitat destruction, genetic erosion and biodiversity loss, ecosystems disruption and climate change with global warming effects at the unprecedented rate. The global concern from both perspectives of environmental sustainability and obesity epidemic with the current unsustainable dietary trends has imposed various consequences on human health with soaring prevalence of overweight, obesity and resultant chronic illness.⁴⁰ The challenges of improving the food system in this 21st century will require systemic approaches that take full account of social, economic, ecological and evolutionary factors, and therefore, applying a population health promotion lens to understand these multiple concerns that the current dietary trends of animal-sourced nutritional health amongst other ecological determinants of health, which have provided insights into further interventional strategies for promoting healthy and sustainable diets, especially from the ecological public health perspective on both obesity epidemic and environmental sustainability. The co-benefits of sustainable diets in transition as synthesized growing body of professional knowledge that brings environmental sustainability to its rightful place at the center stage of nutritional health per se.

For promoting sustainable diets with this vision on the global health and agenda of environmental sustainability, action must be taken on the full range of health determinants with the suggested ecological public health perspective that have significant implications on the collective dimensions as they are interconnected and interrelated. As our growing understanding and recognition proactively in the landscape of the “global and sustainable health continuum” that require a new paradigm to tackle these pressing predicaments, and supported plant-based food is that many interventions which can improve individual health and are also good for the health of the planetary system are termed as ‘virtuous cycles’ in relationship between food, health and environment. Education of this evolving and expanding role of health promotion to all health professionals with this concept of sustainable diets is yet again, absolutely indispensable, as integral part of the

dietary transition for environmental sustainability under the holistic ‘One Health’ notion as the ecological public health model in the 21st century towards global health amongst humans, animals and the planetary.

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Conflict of interest

Author declares that there is no conflict of interest.

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