

Wholesome nutrition: halal and sustainable

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Abstract

Human subsistence is highly dependent on food. Food offers essential nutrients for the healthy growth and development of all cells in the body; as well as providing energy for day-to-day activities. A healthy diet focuses on balance. This refers to consuming the right foods in the proper proportions to maintain a healthy weight and optimize the body's metabolic processes. Today, the nutrition arena has evolved rapidly. In developed countries, nutritional deficiencies efforts have shifted to managing excessive calories, inactive lifestyles and stress. Nutritional and technological advances concurrently curbed nutrient deficiency diseases, while abutting the growing concerns on obesity, non-communicable diseases and ageing. Acknowledging the nutritional guidelines worldwide, it is imperative to look at the “new-old” approaches to maintaining a wholesome diet to ensure a healthy lifestyle. In the 1980s, the University of Giessen came forward with the concept of ‘Wholesome Nutrition’ which is a concept of sustainable nutrition. It comprises health and the ecological, economic, social and cultural dimensions of nutrition. Later, sustainable nutrition incorporates the environment, economy, society, health and culture. On the other hand, past lessons and observing the good manners of the previous Muslims are recommended by Islamic principles. Among similarities in the core elements discussed by both are the preference for plant-based foods and minimally processed products. This article discusses the approaches by the West on the concept of sustainable nutrition; and eating habits by early Muslims in achieving wholesome nutrition.

1. Introduction

Food is essential for living. Foods distribute energy and nutrients. Diets incorporate foods that contain nutrients and other food components (Tapsell *et al.*, 2016) that should be taken moderately to achieve optimal energy and physiological needs (Stark, 2013), preventing both undernutrition and overnutrition. The American Society for Clinical Nutrition (2003) highlighted while adequate nutrition is ideal, modified nutrition is also needed at different stages of life or in preventing or managing diseases. Diet and health highly relate to

dietary patterns, the effect of foods on health, and the mechanism of nutrients physiologically (Tapsell *et al.*, 2016). However, the nutritional landscape has changed over the years. Excessive nutrient challenges have replaced nutrient deficit challenges. Nutritional and technological advances concurrently curbed nutrient deficiency diseases, while abutting the rising challenges of obesity, non-communicable diseases and ageing (Shao *et al.*, 2017).

Ridgway and co-workers (2019) summarize four

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main public health nutrition eras as described by Kuhn (2012); i) Foundation Era; ii) Nutrient Deficiency Era; iii) Dietary Excess and Imbalances Era, and iv) Food System Sustainability Era. These stages focus on the dynamics of nutritional challenges, in response to the nutrition-related diseases faced during the respective periods; as well as important dietary and health-related paradigm shifts. Three nutritional guidance systems were introduced and communicated through nutritional reference values (NRVs), dietary goals and dietary guidelines.

Fast forward to the food system sustainability era, where nutrition does not only incorporate the challenge of double burden malnutrition, or traditional, biological understandings of food and health. In this 21st century, it is perceived; that “The key challenge for nutrition research is to produce new knowledge and techniques that permit a balance between enhancing equitable human health while also preserving the biosphere's long-term health” (McMichael, 2005). Nutritional research is increasingly more than just a study of nutritional biology; it encompasses a wide range of other scientific disciplines, including social, political, and environmental sciences (Shao *et al.*, 2017), both in production and consumption.

Trend shifts from one era to another are called nutrition transitions (Ridgway *et al.*, 2019), linked with societal transformation and their impact on dietary patterns, as well as urbanization, the evolution of the labour force and the globalization of food systems (Goh *et al.*, 2020). The varied dietary guidelines can be associated with significant differences in individual country contexts such as differences in nutrition status, food availability, culinary cultures, and eating habits between low-, middle- and high-income countries and regions (Ridgway *et al.*, 2019). Our eating habits or dietary patterns evolve parallelly with the paradigms of the public health nutrition era.

However, food choice is typically motivated by instinct, culture and environment (Gibson and Cooke, 2017). Indirectly, the advancement of nutrition science has widened our comprehension and moulded our behaviour towards food (Hammed *et al.*, 2017). The different types of diets mushroomed to adapt to modern dietary patterns include, but are not limited to a Mediterranean diet, an Asian diet (Japanese or Korean's healthy eating patterns), a healthy diet (such as Dietary Approaches to Stop Hypertension (DASH) or Mediterranean-DASH Intervention for Neurodegenerative Delay (MIND)) (Cena and Calder, 2020) and many others. Another note-worthy approach is the Muslim eating habits, particularly among the earlier Muslims. Islam has highlighted various guidelines on

ways to interact with food, such as eating halal, refraining from alcohol, carcass, blood and pigs, and adopting halal slaughtering among others (Hammed *et al.*, 2017). Early Muslims' dietary habits are not just seen to be healthy, but it is also recommended (Shah Alam and Mohamed Sayuti, 2011).

This article discusses some similarities and variances in early Muslim eating patterns from a nutritional standpoint with regard to the new and evolving concept of sustainable nutrition. This interaction is apt to synergize eating halal sustainably, as a motivation to adapt, adopt and inculcate a sustainable wholesome diet.

2. Wholesome dietary

2.1 Ephemeral history

In the past, as far as public health nutrition is concerned, dietary or nutritional sciences combat challenges that arise during a specific era. In the foundation era, the Industrial Revolution ushered in a period of huge migration to cities, resulting in overpopulation, starvation, and inadequate sanitation. Microorganisms and other pollutants in food and water produced outbreaks of communicable diseases. As a result of sanitary efforts to prevent infectious diseases, food safety became a key public health priority. Nutrition science has also been applied to the creation of food processing systems to improve food safety due to the risk of foodborne illness (Callaway, 1997). Following these advancements, the emergence of an official health department, food policies and official nutrition guidance entailed.

The nutrient deficiencies era was focused on the reduction of hunger while addressing micronutrient deficiencies; particularly diseases such as beriberi, scurvy and pellagra (Ridgway *et al.*, 2019). This era saw the discovery of micronutrients that simultaneously inspired reductionist and productionist theories. The reductionist approach scrutinized the relevant nutrient for a given condition, as well as its recommended intake (Messina *et al.*, 2001), while the productionist catered for mass food production, integrated with agrochemical and food manufacturing (Lang *et al.*, 2001). However, reductionists only emphasized specific nutrients and subsequently underestimated the complex interaction of food components. This increased the diet's emergent qualities, which were not understandable at the chemical component level (at the time) (Shao *et al.*, 2017).

Later in the third era, hunger was greatly reduced. However, chronic diseases related to food become abundant (Ridgway *et al.*, 2019). Over time, the escalation of global food production is triggering significant environmental destruction by which, food

habits could be one of the influences (Koerber *et al.*, 2017). This was the motivation for the incorporation of environmental sustainability in food production and nutritional sciences (Ridgway *et al.*, 2019).

2.2 Sustainable and halal nutrition

Sustainable diets came about in the 1980s to improve environmental and human health (Ridgway *et al.*, 2019). Concurrently, Koerber and friends (2017) started researching wholesome nutrition which emphasizes a plant-based diet with minimally processed foods and encompasses four equally important aspects: health, ecology, economics, and social well-being. Then, the cultural aspect is incorporated into the system. In Sustainable Nutrition, all steps of the food supply chain are considered, including input production, agricultural production, food processing, distribution, meal preparation, and waste management (Koerber *et al.*, 2017).

“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” (Burlingame and Dernini, 2012). Figure 1 summarises the nutritional year transitions and challenges to be addressed.

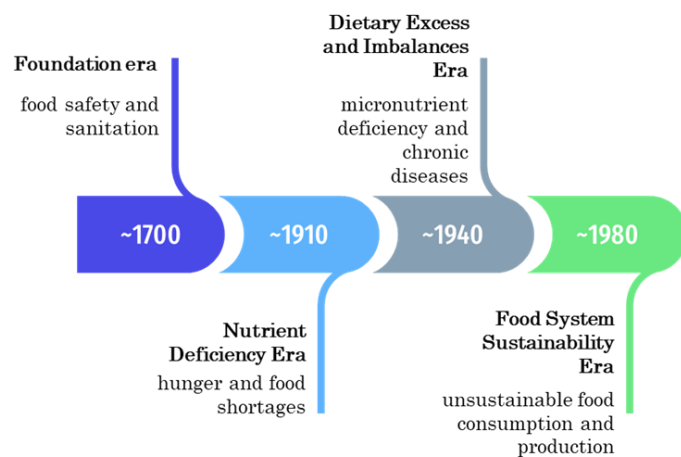


Figure 1. Nutritional year transitions and challenges to be abated. Adopted and modified from Ridgway *et al.* (2019).

On the other hand, it is interesting to look at the concept of wholesome food from another perspective. Mariam (2018) explained that a human is deemed healthy if he is not physically or mentally ill, as well as spiritually or internally. In this scenario, halal nutrition was introduced, emphasizing two crucial elements: halal food (the Prophet Muhammad p.b.u.h. diet) and the Prophet Muhammad p.b.u.h. or Islamic eating habits.

Halal is an Arabic word that signifies "allowed" or "authorized in line with Islamic Law." Any product that is not hazardous and safe to ingest as defined by Islamic Law, and hence is lawful and permissible, is referred to as a *halalan toyyiban* product. It reflects a wholesome notion that includes quality, cleanliness, and safety for everybody (Omar *et al.*, 2013). According to Islamic dietary rules, Muslims may only consume halal and nutritious foods that are clearly declared in the Quran, “O ye people! Eat of what is on earth, lawful and good, and do not follow the footsteps of the Evil One, for he is to you an avowed enemy” 2:168. The word good is linked with the word lawful to highlight the significance of wholesomeness in food. Consequently, their intake may contribute to humanity's overall well-being (Daud *et al.*, 2011).

2.3 The impetus

Previous nutritional paradigms solved the challenges at the time but resulted in a profound challenge today. Despite the fact that agricultural globalization has raised overall food production beyond population demands, one-third of all food produced for human use is lost or squandered each year (McMichael, 2005; Koerber *et al.*, 2017). This was attributed to food production, food processing, internationalized food marketing systems and unsustainable food consumption (Martinelli and Cavalli, 2019). As a result, environmental consequences such as energy scarcity and long-term rising energy prices, climate change, poverty and world hunger, water scarcity, soil degradation, biodiversity loss, challenges related to animal breeding and feeding, and economic and financial crises became unavoidable (Koerber *et al.*, 2017). Several factors and effects of unsustainable nutrition are summarized in Table 1.

Therefore, a shift toward more sustainable lifestyles that encompasses land usage, mobility, habitation, nutrition, energy production, and other aspects is inevitable. The impression of Sustainable Nutrition reflects these features and, through influencing consumer behaviour, leads to a reduction in greenhouse gas emissions in the area of nutrition. Adopting a diet that incorporates this philosophy can help prevent global warming in the long run (Koerber *et al.*, 2017). Consuming halal food and beverages, on the other hand, has as its goals the preservation of religious purity, the preservation of the Islamic mentality, the preservation of life, the preservation of property, and the preservation of future generations (Mariam, 2018). Adoption of a basic diet, such as halal, to improve long-term nutrition is highly encouraged.

Table 1. Causal effects activities with solutions towards sustainable nutrition.

Causes	Activity	Effects	Solution
Food Production	Mono-cropping; deforestation; poor soil management; fertilization; intensive poultry/cattle raising; uncontrolled irrigation.	Extensive biodiversity loss; greenhouse gas emissions; erosion; salination; acidification; compaction; water-logging and the loss of organic material.	Integration of cattle raising, food production and forestry; reduction in meat and meat products; organic farming; family farming.
Food Processing	Chemical Intensive, highly processed.	High-fat intake, high nutritional losses, chronic diseases.	Avoid food made by large corporations; public policies to encourage healthy eating.
Internationalized Food Marketing System	Long chain with intermediaries.	Changes in the dynamics of small markets.	Locally based food system; short marketing circuits; direct purchases from
Unsustainable Consumption	Declining crop yields and other factors.	Food insecurity in poor countries; excessive food consumption.	Agro-ecological food practices.

Adopted and modified from Martinelli and Cavalli (2019), Ridgway *et al.* (2019) and Koerber *et al.* (2017).

2.4 Dietary patterns

In this era, with the assimilation of sustainable nutrition into the wholesome dietary concept, we are looking back on the old way of eating with a new perspective (a new-old approach). Koerber and co-workers (2017) emphasized the principles of Sustainable Nutrition (1) Plant-based foods are preferred; (2) Organic foods are preferred; (3) Regional and seasonal products are preferred; (4) Minimally processed meals are preferred; (5) Fair Trade items are preferred; (6) Resource-saving housekeeping is preferred; (7) Enjoyable eating culture is preferred. In juxtaposition, the sustainable system as suggested by Martinelli and Cavalli (2019) includes agroecology in food production; short chains of food marketing; limited food processing and sustainable food consumption. This is further acknowledged in the Sustainable Development Goal (SDG) whereby nutrition is linked to almost all SDGs, and it is projected to play a critical role in the transition to more sustainable communities, especially Goal 2 which aims to eliminate hunger, increase food security and nutrition, and encourage sustainable agriculture (United Nations, 2015).

Apart from that, adopting the practices from the early Muslims' way of life in order to stay on track with Islamic precepts is an Islamic principle. Learning from the past and imitating the good manners of prior Muslims is a strategy advocated by Islamic teachings (Habib *et al.*, 2011). Hence, the new-old approach. Islam highlighted the importance of a well-balanced diet, which includes the majority, if not all, of the necessary nutrients for the human body's growth, strengthening, and healing (Mariam, 2013). Consumption of the just-right amount of food, the consumption of nutritionally beneficial fruits and oils, the use of safe eating habits, the avoidance of alcohol and other hazardous substances,

rejection of pigs and pig products, rejection of animal blood and carcass (Hammed *et al.*, 2017), and so forth are all a part of it.

The wholesome dietary patterns in Islam, led by the Quran and practices of Prophet Muhammad p.b.u.h. also are in sync with most of the approaches highlighted under sustainable nutrition. To the author's knowledge, there is hardly a comparison between these two approaches to wholesome diets being discussed in the literature. Table 2 highlights five of the principles that integrate halal and sustainable nutrition towards a wholesome diet, adopted from Hammed *et al.* (2017) and Koerber *et al.* (2017).

It is worth mentioning that the wholesome diet by implementing sustainable nutrition was introduced over 1400 years ago, during the life of Prophet Muhammad p.b.u.h. The new approach in the present was a repetition of the concept, incorporated with larger aspects, impacts on social, economic and environmental, strengthening and giving it a dynamic and complete framework, although we have to bear in mind that Islam is complete, knowledge is too vast to be explored.

Table 2. Similarities of sustainable nutrition and halal nutrition.

Halal Nutrition	Sustainable Nutrition
Less consumption of meat	Reduction in meat and meat products
Eating dates, water, honey, barley, and grapes	Preference for plant-based foods
Vinegar, yoghurt, bread, milk	Preference for minimally processed foods
Eating in group	Enjoyable eating culture
Eating in moderation	Prevention of food waste

Adopted from Martinelli and Cavalli (2019), Mariam *et al.* (2018), Hammed *et al.* (2017) and Koerber *et al.* (2017).

2.5 Impact of dietary patterns on health and well-being

Excessive and heavy meat consumption, on the other hand, raises the risk of noncommunicable diseases (Mullee *et al.*, 2017). Plant-based diets are generally healthier and better for the environment, especially when compared to meat production's significant environmental impact and function as a risk factor in many diet-related disorders (Ridgway *et al.*, 2019). Failure to address the dramatic rise in the prevalence of overweight and obesity in Malaysia (the fattest country in Asia since 2014) and elsewhere has increased health risks for noncommunicable diseases (NCDs) like diabetes, cardiovascular diseases, and cancers, as well as other health issues, resulting in higher morbidity and mortality rates (Lee *et al.*, 2020).

Processed food is one of the factors that contributed to this. In one aspect, food processing increases the variety of foods, preservation and storage for longer periods, and enhances food safety, palatability and convenience (Martinelli and Cavalli, 2019). However, food processing can also degrade or eliminate vital and health-promoting nutrients. Foods that have been minimally processed contain more of these components, have a higher nutritional density, and have a lesser energy density (Koerber *et al.*, 2017). It can also pose a major risk for healthy and sustainable diets, especially as many of the original nutrients are lost and fats, sodium, sugars, additives and preservatives are incorporated (Martinelli and Cavalli, 2019). Prophet Muhammad p.b.u.h. preferred eating fruits such as dates, honey, barley, and grapes and minimally processed foods such as vinegar, yoghurt, bread, and milk. Fruits contain phenolic compounds and vitamins with antioxidant properties, that could lower the incidence of chronic illnesses and helps the body in tackling free radicals (Hammed *et al.*, 2017). Plant meals also contain dietary fibre, which enhances satiety, despite the fact that their energy level is similar to or lower than that of animal-based diets (Koerber *et al.*, 2017).

Appreciating tasty meals and generally enjoying eating culture is important for the application of increased sustainability in all fields (Koerber *et al.*, 2017). Also, eating in the congregation as practised by the early Muslims is associated with food enjoyment. Generally, eating together promotes a friendly atmosphere and improves social connections, apart from making people feel more at ease and relaxed, especially among friends and family members (Nakata and Kawai, 2017).

Next, eating in moderation is key to a balanced diet. It is considered a viable interventional strategy for weight gain prevention and weight maintenance (Van

Dellen *et al.*, 2016). In addition, Islam teaches us to fill only one-third of the stomach with food, one-third with water, and one-third with air. In essence, we are encouraged to stop eating before reaching full satiety (Mariam, 2018). This habit could prevent irresponsible food wastage, considering that 795 million people are undernourished globally (United Nations, 2020).

Before the COVID-19 strikes, two billion hectares of land on Earth had been damaged, affecting 3.2 billion people, causing species extinction, and worsening climate change; meanwhile, forest areas continue to degrade at an alarming rate, primarily due to uncontrolled agricultural growth. More people were impacted by moderate or severe food insecurity around the world. Recovery plans must promote the transition to a low-carbon, climate-resilient economy and universal access to high-quality public services, while excellent leadership and support are required to ensure that statistical organizations have the tools and resources they need to make timely and informed decisions (United Nations, 2020).

2.6 Transformation of eating behaviours toward wholesome dietary

Our current diet is based on high-energy foods that are less diversified, supporting and encouraging agricultural intensity and worsening a global trend towards an unhealthy epidemic. Disability-adjusted life years (DALYs) is a "health burden metric that combines years of life lost due to disease disability and premature mortality". The Global Burden of Disease (GBD) has been using DALYs to assess the global and national health burden associated with a variety of health concerns, including those linked with dietary intake (Fulgoni *et al.*, 2018).

In Malaysia for example, the dietary risk is one of the top three risk factors for death and disability, with high blood pressure being the first factor, followed by tobacco. All these three factors saw an increase from 2009-2019. Additionally, risk factors such as high body mass index, high fasting plasma glucose, high LDL and malnutrition that are directly related to eating behaviours were the top ten factors for death and disability. Although malnutrition has decreased over the span of ten years, it is still an alarming contributing risk factor (Healthdata, 2021).

Tobacco, dietary risk and malnutrition can be further grouped under behavioural factors, including physical (in)activity, sleep hygiene, sensation-seeking, alcohol consumption, substance use, sexual behaviours, gambling, and coping mechanisms (Schulich Medicine and Dentistry, 2021) while the rest falls under metabolic

factors. It is also imperative to note the environmental factors such as socio-economic, ethno-cultural, political, and policy conditions. The dynamic correlations among behavioural and environmental factors build up the complexity of resolving public health complications, demanding interdisciplinary collaborations to develop innovative and multi-prolonged solutions (Schulich Medicine and Dentistry, 2021). Tackling this diet quality and excess energy intake will not only be vital for human health but has imperative consequences for environmental sustainability (GBD 2019 Diseases and Injuries Collaborators, 2020).

Implementation of the five approaches by Koerber *et al.* (2017) would be a great start in a paradigm shift toward a wholesome diet. Other than being beneficial to one-selves, the strategies could also help tremendously in tackling climate change and food insecurity. A shift towards novel wholesome dietary, evidence-based strategies whereby foods consist of the principal dietary targets rather than nutrient-based was carefully explained by Mozaffarian and Ludwig (2010). The shift would help in translation to the community, linked with scientific advances in chronic disease prevention, alleviated industry exploitation, and improved widespread confusion on healthy diets. Additionally, it actually agrees with the new-old approach of consumption, as healthier food-based dietary patterns have occurred for generations, such as the time of earlier Muslims.

Therefore, some strategies must take place to correlate the recommendation. The National Institute of Health US (NIH) for example, came up with the NIH Nutrition Research Strategic Plan 2020-2030 which seeks to be a "catalyst for modernizing nutrition research by guaranteeing rigour and uniformity across biomedical research studies that study the role of diet in disease". There are four strategic goals highlighted in the report: i) Promote discovery and innovation through foundational research; ii) Investigate the role of dietary patterns and behaviours for optimal health; iii) Define the role of nutrition across the lifespan for healthy development and ageing; and iv) Reduce the burden of disease in clinical settings—all of which could holistically offer multifaceted recommendations for 21st-century nutritional patterns (Rodgers and Collins, 2020). This is in line with Malaysia's National Plan of Action for Nutrition (NPANM) III (2016–2025), which seeks to boost food and nutrition security, improve nutritional status, and minimize diet-related NCDs (Goh *et al.*, 2020).

4. Conclusion

The integration of halal sustainable nutrition is the new-old approach toward a wholesome diet. It is

noteworthy that the list of halal dietary approaches is non-exhaustive as there could be more explanations and discussions on sustainable and halal nutrition that the authors have left out. It is recommended that the list be expanded to a sustainable approach for food marketing and food production too.

Conflict of interest

The authors declare no conflict of interest.

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