Nutritional Transition in Unindustrialized Countries: Causes and Consequences on Public Health

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Abstract

Background: Unlike the double burden of malnutrition, which has had severe consequences for countries all over the world, the triple burden of malnutrition is also causing problems. As a consequence, almost all human behaviours, such as the degree of human physical activity, dietary patterns, physical characteristics and disorder are evolving day after day.

Methods: We analyzed more than 60 articles and included data and information from 26 corresponding sources. These studies have been carried out in voluminous developed and underdeveloped countries of Asia, Africa, America and Europe's.

Results: The findings of these studies showed that in underdeveloped countries, human attitudes, dietary practices, and disease status have been rapidly evolving. In comparison to the previous period, the people of these countries are leading more sedentary lifestyles in the present and consume a high-fat, high-sugar, and high-salt diet. As a result, they've developed a variety of non-communicable diseases, such as obesity, diabetes, and chronic heart disease.

Conclusion: Along with the adverse consequences of nutrition transition in underdeveloped countries, many others have been suffering from malnutrition, causing these countries to endure a double burden. That's why; all responsible authorities should take and apply necessary steps to tackle this burden as early as possible.

Keywords: *Communicable disease, Demographic transition, Double burden,Epidemiologic transition, Globalization, Non-communicable disease,Nutrition transition,unindustrialized countries.*

Introduction

The shift in disease type and prevalence mainly occurred due to shifts in nutrition transition and lifestyle changes that have been regarded in many unindustrialized countries in the world which is closely related to rapid urbanization, economic growth, and technological advances [(1)].

Increasing globalization in the food system and rapid economic growth, the population shift from minimally processed diets rich in staple foods of vegetable origin to diets high in meat, vegetable oils and processed foods high in refined sugars, sodium, and saturated and trans-fats and the excessive consumption of these nutrients is associated with obesity and diet-related NCDs [(2)]. Many changes in diet and physical activity are co-occurring in unindustrialized countries [(3)]. While it is evident that this transition from natural foods and high physical activity to highly processed food and low physical activity is more in the industrialized countries, it must be noted that

the unindustrialized countries are following suit [4].

Nutrition transition cannot be completely discussed without mentioning two well-known transitions in public health. They are "Epidemiologic transition" and "Demographic transition." The shift from a pattern of prevalent of infectious diseases linked to starvation, intermittent drought, and inadequate environmental sanitation to a pattern of prevalent non-communicable, chronic, and degenerative diseases linked to the urban industrial lifestyle is referred to as epidemiologic. Presently most developing countries are experiencing this epidemiologic transition as reflected in the growing burden of non-communicable diseases [5]. On the other hand, the demographic transition is the switch from a pattern of high fertility and high mortality to low fertility and low mortality. The developing countries are having this transition but at a slower rate. There is an improvement in child survival, an increase in life expectancy at birth, and decreasing fertility in developing countries [6].

Non-communicable diseases disproportionately affect more people in developing countries and account for 80% of all NCDs-related death annually [7]. In low-income countries, infectious diseases are now replaced by nutrition-related non-communicable diseases (NCDs) and about 80% of the mortality occurs due to CVDs in most low and lower-middle-income countries [1]. Overweight and obesity are the important risk factor of CVDs, type-2 diabetes, certain cancers, etc. and globally around 2.8 million peoples are dying annually due to having overweight and obesity and about 35.8 million disability-adjusted life-years occurs due to overweight and obesity [8]. World Health Organization exclaimed that eight of the world's ten most obese nations are from Pacific Island Countries where 33% of adults are living with overweight and obesity. In the Pacific region, NCDs are responsible for around 70% of all death, and also life expectancy has fallen [9]. Rapid urbanization and technological advancements in South Asian countries such as India, Bangladesh, and Pakistan reduce the need for and scope for physical activity, resulting in a rise in obesity and overweight prevalence.On the other hand, more than half of the underweight child lives in South Asia and in this region malnutrition is the major cause of child mortality. Thus the dual burden of diseases is arising in South Asian countries due to the underdeveloped healthcare system [10].

This review aims to focus on the causes of nutritional transition in developing countries and also focuses on the consequences that are occurring due to this transition on public health.

Methods: Literature Search and Study Selection Strategy

In view of writing the paper, reviewed more than 60 articles, and after careful review, data and information from 26 relevant reference sources were included in the research paper. From peer-reviewed indexed journals, a systematic search of national and international literature, especially from developing countries, was conducted. Most relevant data and information on various published papers have been included in this paper, which was collected from the Cochrane Library and Google Scholar using different keywords. The most recent data is used to assess the current situation.

Numerous Causes of Nutrition Transition in Unindustrialized Countries

The nutrition transition is fueled by several factors, including urbanization, economic growth, technological changes in work and leisure, food processing, mass media growth, excessive intake of caloric beverages, excessive snacking. The rise in urbanization translates to the rise in sedentary white-collar jobs as against the previous labor-intensive jobs. With urbanization, the previous modes of transportation that are labor-intensive are replaced by sedentary modes of transportation, e.g., buses and trains[5, 11]. Urbanization is also associated with increased income, with increased spending on food[12].

With increased economic growth, there is higher per capita income; hence the greater population can afford to spend more on edibles leading to excessive consumption, which leads to obesity and nutrition-related non-of communicable diseases. Research has shown that increased income per capita for a country is

linked with increased intake of animal products and fat [13].

Technological changes also pushed the nutrition transition because chores that were previously manually done are now done by machines. Examples include the utilization of washing machines for laundry as against hand wash, use of vacuum cleaners rather than manual sweeping. Technology has also affected recreation, as children who used to run around and play now sit in front of the television or play video games. In addition to inactivity, there is a rise in snacking and soda consumption when watching television[5, 11, 12].

Food processing and increased intake of animal source foods also are factors influencing nutrition transition. Increased food processing leads to the production of high fat and high sugar foods and increased availability of caloric beverages. Research has shown that the diet that increases the risk of chronic diseases is relatively high in total fat, sugar, salt, alcohol, refined grains, and foods of animal origin [13].

Social media growth was noted as another factor accelerating the nutrition transition. There is aggressive marketing by food companies. The adverse is designed to convince people to consume processed foods and calorie beverages. Some of these observe especially in developing countries, are misleading. They give false information about the contents of their products [14].

Various Consequences of Nutrition Transition on Public Health in Unindustrialized Countries

Unindustrialized countries are undergoing various types of transitions. The epidemiological transition allows them to face a dual burden of communicable diseases that cannot be transmitted. Similarly, demographic and socioeconomic are also occurring in these countries. Formerly developing countries had a high appearance of undernutrition, but this era of transition has also brought a dual burden of undernutrition and overnutrition in these countries. The existence of a dual burden poses a challenge for intervention. Overweight and obesity make people prone to non-communicable and degenerative diseases, whereas undernutrition may make them prone to communicable diseases and reduce productivity [15].

Nutrition transition has led to an increase in the prevalence of nutrition-related non-communicable diseases, including obesity, childhood obesity, cardiovascular disease, cancers, etc. [12-14, 16-18].

Obesity is a major outcome of nutrition transition. It is also a predisposing factor to many other nutrition-related non-communicable diseases, including cardiovascular diseases, diabetes, and cancers. There has been a reported increase in obesity prevalence inunindustrialized countries as depicted by a study in sub-Saharan Africa, which reported that 10 to15 % of adults are overweight [12]. Also, there is an increase in the prevalence of overweight among poor developing countries [19]. The Nigeria Demographic and Health Survey (NDHS) 2008 reveals that nearly 1 in 4 women in Nigeria is either overweight or obese (16% overweight and 6% obese). The NDHS also repeated that more urban women (31%) than rural women (17%) are overweight or obese. It also revealed that overweight and obesity increase with increasing wealth [20]. A meta-analysis of the prevalence of and time trend in obesity in West Africa conducted in 2007 reported thatthe prevalence of obesity in urban West Africa more than doubled (114%) over 15years [3]. Some studies in Thailand have revealed that the prevalence of childhood obesity is increasing in developing countries [21].

Cardiovascular diseases are among nutrition-related non-communicable diseases that are on the rise in developing countries. In Tanzania, the prevalence of hypertension among top executives is as high as 48.9%[22]. The prevalence of cardiovascular diseases has increased to 10 fold in sub-Saharan Africa in the last 20 years [4]. In 1990, developed countries had 5.3 million deaths due to cardiovascular diseases, while developing countries had 8 to 9 million deaths, a 70 percent difference [23].

Diabetes mellitus is another nutrition-related non-communicable disease that is on the increase in developing countries. Eighty percent of diabetes death occurs in low and middle-income countries [12]. The World Health Organization (WHO) predicted that the

most rapid increase in the prevalence of diabetes mellitus would be in India, where a rise is projected from 1997 estimated of 20.8 million cases to 57.2 million in 2025 [24].

The other nutrition-related non-communicable disease that itisappearance is increasing in developing countries is cancer. Dietary factors are estimated to account for approximately 30% of cancers in western countries and 20% in developing countries and are projected to increase [12]. In 1970, approximately 15% of newly reported cancers were in developing countries. The figure increased to 56% in 2008 and is estimated to rise by 70% by 2030 [25]. Also, Dr. Margaret Chan, ex director-general of the World Health Organization (WHO), stated that around 70% of cancer deaths occur in developing countries [25].

Addressing the HIV/AIDS burden as a primary goal has wide-ranging benefits, and failure to do so not only increases the health burden and decreases the lifespan, but has direct economic consequences, as most of those affected comprise the workforce in developing countries [26].

Conclusion

With the advancement of science and technology food production process, food processing techniques and food preservation techniques are changing day by day throughout the world. At the same time human lifestyle and behavioral practices are also fluctuating. As a result, nutrition transition would become very typical. But, to protect the public health, the nutrition transition is an issue that must be considered into. The citizens, parents, families, communities, non-governmental organizations, and the government must be carried along to tackle this. Investing in reversing the transition's tide would undoubtedly pay off, as the latest trend indicates that the strain would be devastating in the future if nothing is done now.

Ethical clearance

As it was a review article, consent for publication and ethical approval was not necessary for this article.

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