



Food Security in Pakistan: Analyzing the Role of State in Providing Healthy Food

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ARTICLE INFO

Article History

Received : 20/11/2019
Revised : 30/12/2019
Accepted : 30/12/2019
Available online : 30/12/2019

Keywords

Contaminated Food
Efficiency
Growth of GDP
Health Diseases
Death Rate
Food Supply

ABSTRACT

it is not just the quantity of the food that offer nourishment to the human body but the hygienic and pure food keeps a person appropriate in health. The need of the day is to analyze the concerns about food safety. These are not the but the economists are concerned about the healthy food provisions. In Pakistan the governments allocate a very small amount of funds for the sector and a minor and insignificant amount is allocated to ensure the safety and hygiene of the food available for consumption. The unhygienic food consumption led to the increase in extent of diseases resulting an increase in death rates. The research endeavors to aim found the intake of unhealthy food have dual impact one is by affecting the health conditions of the individuals and the productivity level of the individuals. Furthermore, the cost of government was also estimated in provision of the healthy food to everybody. The cost of monitoring the supply of healthy food to people is a challenge to the economy. It was recommended to ensure the supply of safe and hygienic food throughout the country in the best and cost-effective approach.

1. INTRODUCTION

"We are what we eat" is an old aphorism. Food is of top most significance for everyone since the inception of the world. It not only gives humans the energy to grow but also fulfill their dietary needs. Our nutritional status, health, bodily and mental abilities depend on the food we eat. Access to good quality food has been man's main struggle since the beginning. The safety of food is a basic requirement and is a concern of everyone. Food security is, in fact, much more than just food production, distribution and consumption.

Food safety basically means that what we eat or drink is harmless for human wellbeing. It infers the nonexistence or an acceptable level of impurities, contaminants, adulterants, chemicals, additives, naturally occurring pollutants (toxins) or any other substance that makes the food harmful to health or the well-being of the person on either chronic or acute basis. The World Food Summit (1996) has defined food security in the following words:

"Food is said to be secured when all the people that make up the society have an approach and access to sufficient, enough, safe and nutritious food, at all times, both physically and economically. The available food resources fulfill their dietary needs and their food choices or preferences to lead an active, healthy and a long live are also met." The right to food is one of the basic fundamental human rights as prescribed by the International Covenant on Economic, Social and Cultural Rights (ICESCR). ICESCR recognized the "right to an adequate and satisfactory standard of living, with sufficient food", as well as the "vital and basic right to be hunger free".

Food contamination refers to every type of food that is spoiled, infected, or polluted because it either contains microorganisms, such as bacteria or parasites, or toxic substances that make it harmful for consumption. Food contamination is either bacterial or ecological (environmental). The contaminated food has now become an integral part of

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To cite this article: Ali, H., Yasmin, F., (2019). Food Security in Pakistan: Analyzing the Role of State in Providing Healthy Food. Techno-Science, vol. 2, no. 4, p. 90-101.

our daily diets. The food that is being supplied in the markets, restaurants and cafes doesn't meet the standards set up by the World Health Organization. The people engaged in the 'Food Business' do not follow the basic hygiene principles. The five basic hygiene principles as defined by WHO are [1]:

1. Prevent the contamination of food with different sorts of germs or pathogen spreading from people, pests, pets or any other environmental factors.
2. The raw and cooked food should be stored separately so that the harmful microorganisms found in raw food doesn't spoil or contaminate the cooked food.
3. Food should be cooked for an appropriate length of time, in a prescribed manner and at a defined temperature so as to kills all sorts of pathogen present in it.
4. Food, both cooked and raw, should be stored at an appropriate and a set temperature.
5. Safe water and cooked materials should be used extensively.

All these principles need to be followed in order to ensure food safety. If these rules are not followed then the problem of food insecurity can become a serious threat in the future. Food insecurity has become one of the major national problems in Pakistan. According to national nutritional survey (NNS) in 2011 almost 58 percent of Pakistanis face food insecurity [2]. The intensity of the problem of food security is increasing day by day. Many people are suffering from acute malnutrition. Every year more than 70 million people get sick from food poisoning which occurs after consuming contaminated food.

Pakistan's existing projected population is over 192 million. It is the sixth most populous country in the world. In the years 1950–2014, the urban population of Pakistan increased drastically by seven times whereas, the total population of the country increased by four times. It is because of such rapid increase in population that a lot more food is presently obligatory to fulfill the dietary requirements of the constantly rising population. The rapidly rising population in the urban areas and the constantly developing urban settlements has made the security of food even more troublesome and a challenging problem. The fertile land that was available outside the cities was first being used to grow crops, livestock, dairy farming and cultivate food, is now being converted into housing societies so as to provide shelter to the increasing population. As a result, the gigantic pressure of producing and providing food to urban settlers has shifted to rural agriculture sector. In doing so, the use of substandard fertilizers, insecticides and pesticides have noticeably increased. Although, the abundant use of these chemicals increase productivity but the quality of the food drops and it becomes harmful for consumption.

In Pakistan, poor nutrition leading to various diseases, morbidity and fall in the efficiency and productivity of the people has both been a significant public and economic issue for many decades. Studies show that there is a terrifyingly dangerous nutritional situation among the common population but is more severe among low-income populations.

Health diseases and poor nutrition signify a great liability to affected individuals. The losses faces by the economy, well-being of the country, and welfare of the society because of the increased number of unhealthy individuals might be difficult to quantify but their short term and long term impact is so significant that it cannot be ignored altogether. Such losses are more intense and noteworthy predominantly in those developing regions where provision of services such as social security and health care is limited. Individuals suffering from illness or any other health problem may be weak, unable to work or study and generally unable to provide for children and other dependents. Overall, if the whole society is studied in an aggregated manner, it seems likely that a high disease burden will surely have a negative, adverse and a threatening impact on not only the productivity of the society but also on the growth of the 'growth', the GDP and the economic development of the country. The food supply is now all about contaminated food and therefore, it is not clean or hygienic. This contaminated food has unknowingly become a part of our daily diet.

According to the results of the National Nutrition Survey of 2011, 15.1% of Pakistani children under the age of five are wasted, 43.6% are stunted, and 31.5% are underweight. Children have deficiencies in Vitamin A(30.3%), Iron (32.7%) and Zinc (40%). 62.5% of children are anaemic, only 64.7% are exclusively breastfed up to the age of 6 months and 52.1% are introduced to solid food at 6 to 8 months.

The consumption of unhygienic food results in health diseases like Coronary heart diseases, Diabetes, Diarrheal diseases, Stomach cancer etc. These health diseases caused by the consumption of contaminated food has resulted in the death rate in Pakistan being high as compared to other developing countries. Death rate is defined as the number of deaths per unit, usually 1000, of population in a given place and time. It is currently 6.4 deaths/1000 population.

Moreover, currently the life expectancy for people in Pakistan is 64 years on an average. The problem doesn't end here. What needs to be understood is that that the consumption of contaminated food has resulted in upsetting the efficiency of the people. People who are less efficient make less contribution to the GDP of the country thus becoming a burden on the economy. The government needs to focus on how to supply uncontaminated food in order to ensure that the efficiency of the working class is not affected and they can make their due contribution to the economy as smoothly as possible because a healthy society creates a healthy economy.

1.1. Study Matrix

This study matrix summarizes the literature review. It shows that if enough investment is not made in nutrition or health sector then it would eventually affect the efficiency of the working class. The effect on the efficiency of the people would in turn affect the contribution they make to the economic development of the country.

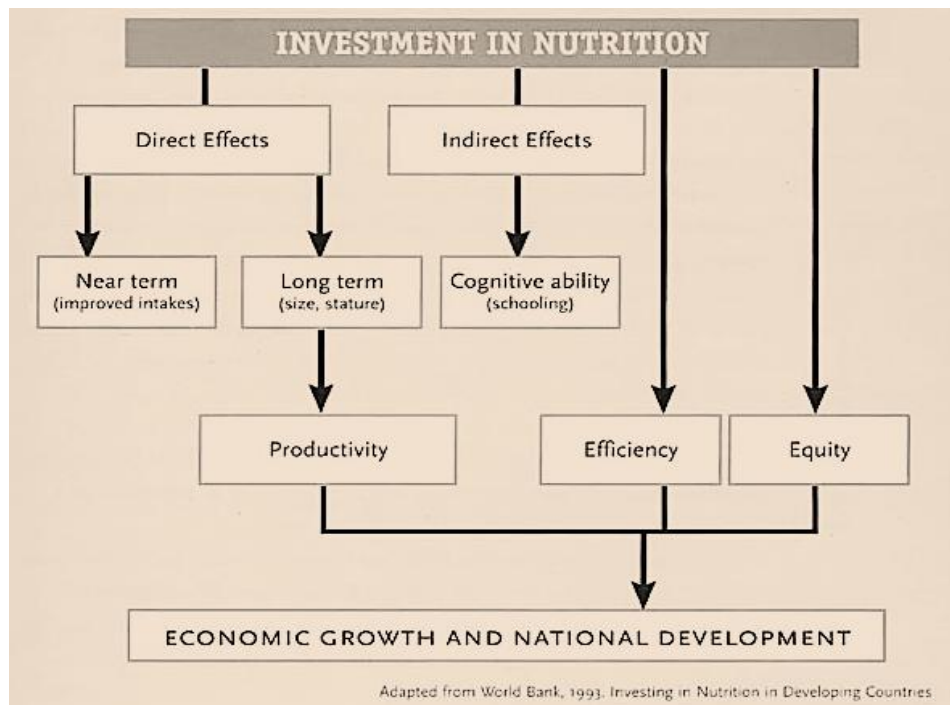


Fig. 1. Study matrix summarizing the literature review

1.2. Purpose of the Study

The purpose of this study is to find out that how deep the impact of contaminated food and poor nutrition is on the death rate, productivity of the labor, their efficiency and in turn on the GDP of the country. Suggestions would then be provided on how to ensure the supply of clean and uncontaminated food to everyone.

2. REVIEW OF THE LITERATURE

Poor nutrition and consumption of unsafe food has affected the performance of people in general, and labor class in particular from a very long time. The impact, contaminated food has on, dramatically decreasing the efficiency of the people cannot be denied in any way.

Strauss and Thomas (1998) emphasized that consumption of hygienic and uncontaminated food resulted in improvement in health, which then resulted in an enhancement in functionality and productivity of labor [3]. Apart for that, Addison (2002) argued that adults who were living in comparatively poorer countries were more likely to be affected with health problems than those people who were living in rich countries. It resulted in decreased labor productivity because the type of work needed to be performed by the labor in poorer countries depended basically on their strength, power and endurance which, in turn depended on their good health [4].

In PAHO (Pan American Health Organization), Suarez duly noted that, "We assumed that certain populations rank low in human capital not only for reasons of genetic heritage but also because of the collective effect of generations of poverty, poor nutrition and poor health" (PAHO, press release). Goldman (2001) pointed out that good nutrition eventually resulted in higher energy levels and greater labor force participation and earnings [5]. On the contrary, it was also figured out that seriously ill people made less contribution to the GDP of the country when they work, and they tend to retire earlier than people who are healthy [6].

Owen (1997) concluded that those people who considered their health to be their foremost priority will, on average, defer the onset of traditionally occurring diseases of old age and retirement, and they will be able to be more productive, more creative, and more efficient and earn more in a befitting manner [7]. Torero (2016) found out that it was not economic growth that made a contribution to food security but it was basically food security that induced economic growth. Actually, Torero convincingly claimed that economic growth was only supportable and sustainable if developed countries tried to achieve food security as a base for their citizens [8]. Rapid economic growth with improved income distribution was

declared possible, only if the policies of the government focus on adjusting and merging the food economy into an effective development strategy [9].

Leibenstein (1957) and later Mirlees (1975) and Stiglitz (1976) [10,11,12] debated that an increase in caloric intake of uncontaminated and clean food enabled workers to perform more demanding and laborious tasks, expressed in an increased marginal productivity as measured by wages. Experimental studies have also been conducted for finding the relationship between nutrition level and economic development. Keys et al. (1950) researched how activity levels fell when males are subjected to intense decrease in nutrition and caloric intake by providing them contaminated food. He found that activity levels fell drastically and abruptly, when diets are reduced from 3.500 calories per day to 1.500 calories per day. In the experiment the total diet was controlled, so that the validity of the results was not affected by the problem of simultaneity [13].

The effect of poor level of nutrition due to the intake of contaminated food was largely seen on the labor force. It was established that the negative impact on turn the labor force in turn created a negative impact on the economy of the country. Those suffering from malnutrition often felt feeble and deficient in energy, were more vulnerable to infection and other diseases than those who took the minimum dietary energy requirements [14,15].

Apart from that, Svedberg (1999) concluded that deficiency in nutrients, especially in childhood, usually had a negative impact on physical growth and as well as cognitive development. Children who had such deficiencies had trouble in completing their schooling due to absenteeism and early dropouts [16]. Another research was conducted for investigating the impact of poor nutrition on the development of the brain. In this research, Lewis et al. (1986) and Politt (1997, 2001) conventionally stated the importance and significance of nutrients, such as iron and Vitamin A, as being vital and necessary for cognitive development [17,18,19]. Correspondingly, a study was performed on the school children in Tanzania. There, Bhargava and Yu (1997) found out that nutritional status was one of the most significant and important predictor of not only the educational test results but also for the efficiency of the people working in those schools. Thus, it can be concluded that poor nutrition and the intake of contaminated food does have a negative impact on the growth of not only the GDP but also on the economic development of the country [20].

3. DATA SOURCES & METHODOLOGY

Data used in the analysis is basically secondary data. Data has been collected from various internet sources, books and newspapers. Data from year 2011 to 2017 has been used. Statistics regarding GDP, caloric intake, death rate and budget has been obtained from Pakistan Bureau of Statistics and World Bank [21]. Pakistan's food security statistics has been taken from the reports of the National Nutrition Survey of Pakistan [2].

The problem of excessive use of contaminated food and poor nutrition exists primarily because of the financial resources allocated by the government to the health sector. Health financing is a serious and significant component of health sector. It shows the expenditures that are made for the following purposes [22-35]:

1. Provision of clean food
2. Provision of clean water
3. Provision of medical facilities
4. Provision of health care units

The expenditures made on health can be divided into two parts:

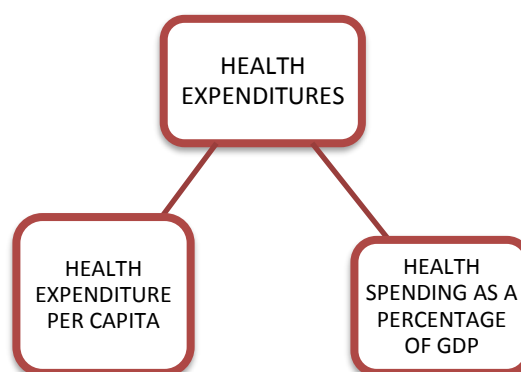


Fig. 2. *Types of Health Expenditures*

3.1. Health Expenditure Per Capita

Health expenditure per capita shows the expenditures made in order to ensure the provision of perfect health services to a single person. Total health expenditure is the sum of both private and public health expenditures. When these expenditures are expressed as a ratio of the total population then the information regarding health expenditure per capita can be obtained. The health expenditure per capita in Pakistan from year 2011 to 2017 has been shown in the table below:

Table 1. *Health Spending Per Capita*

YEAR	HEALTH SPENDING PER CAPITA (US\$)
2011	30.19
2012	28.51
2013	30.95
2014	36.66
2015	33.47
2016	33.64
2017	36.15

Source: Data from World Bank [21]

The expenditures were low before 2013 but after 2013 it kept on increasing.

3.2. Health Spending as a Part of GDP

Total health expenditure is calculated as:

Public health expenditures + Private health expenditures = Total health expenditures.

Total health expenditures cover the provision of health services (preventive and curative), family planning campaigns, related activities, actions taken regarding nutrition, and emergency aid selected for health but does not include provision of water and sanitation. It is expressed as a percentage of the total GDP that has been spent on the health sector. The spending made for provision of better health facilities is shown in the table below :

Table 2. *Health Spending as a Part of GDP*

YEAR	HEALTH SPENDING AS A PERCENTAGE OF GDP
2011	2.94
2012	2.8
2013	2.76
2014	3.26
2015	3.01
2016	3.02
2017	3.08

Source: Data from World Bank [21]

This reveals the fact that the portion of the GDP that has been used as health expenditures has always been very low (around 3%).

3.3. Relationship between health expenditure per capita and health spending as a part of GDP

The graph plotted below shows the relationship between both types of health spending. The health spending per capita has been expressed as a percentage to make the comparison easy. It can be clearly seen that the fluctuations in both type of spending is, more or less, the same.

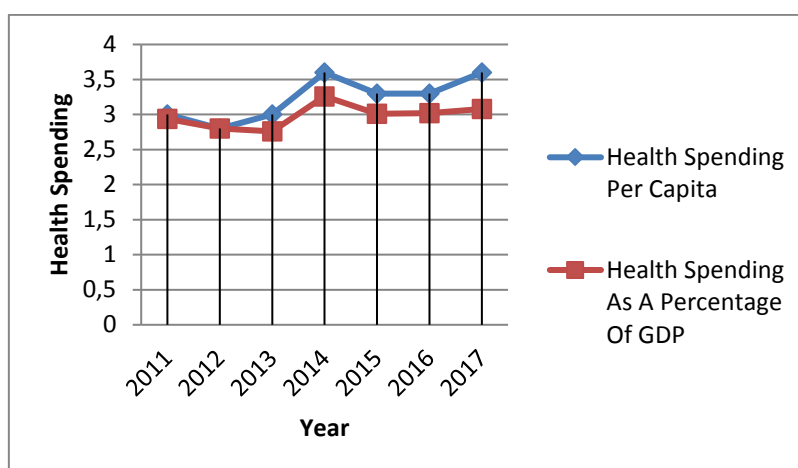


Fig. 3. Relationship between both types of Health Spending

It should be noted that the lower the amount of health spending the harder it is to get access to healthy and uncontaminated food.

3.4. Analysis of the Variables

The impact of provision of unsafe food is very vast. Its impact will be studied on the following variables:

- i. Death rate
- ii. Efficiency of Labor

It will also be shown that how the impact of consumption of uncontaminated food on these variables slows down the pace of economic development. The variables shall now be analyzed separately.

3.5. Death rate- the first Variable

Death rate has been globally defined in the following words:

"The number of deaths per 1000 people."

It is the ratio of total deaths to total population in a definite community or area over a specified period of time. The death rate is often expressed as the number of deaths per 1,000 of the population per year. It can also be called fatality rate. It is generally believed that when low expenditures are made on the health sector then the people become victim of various health diseases and that is when the death rate significantly rises.

The death rate of Pakistan from year 2011 to 2017 is as follow:

Table 3. Death rate and changes in death rate of Pakistan

YEAR	DEATH RATE (per 1000) (in negative)	CHANGE(%)
2011	7.9	0.96%
2012	7.9	0.94%
2013	7.7	1.07%
2014	7.3	1.30%
2015	7.5	1.24%
2016	7.6	1.06%
2017	7.4	1.25%

Source: Data collected from World Bank: 2011-17 [21]

This table shows the fluctuation in the death rate. The fluctuation in the death rate will be related to the fluctuation in the health expenditures made from the year 2011 to 2017.

3.6. Relationship between health expenditures and change in death rate

A graph has been plotted to show the relationship between health expenditures and the changes in death rate from 2011 to 2017. For illustration purposes, the change in death rate has been converted from negative to positive figures. Here, it means that in time period the greater is the change in the death rate, the lower is the death rate of that period.

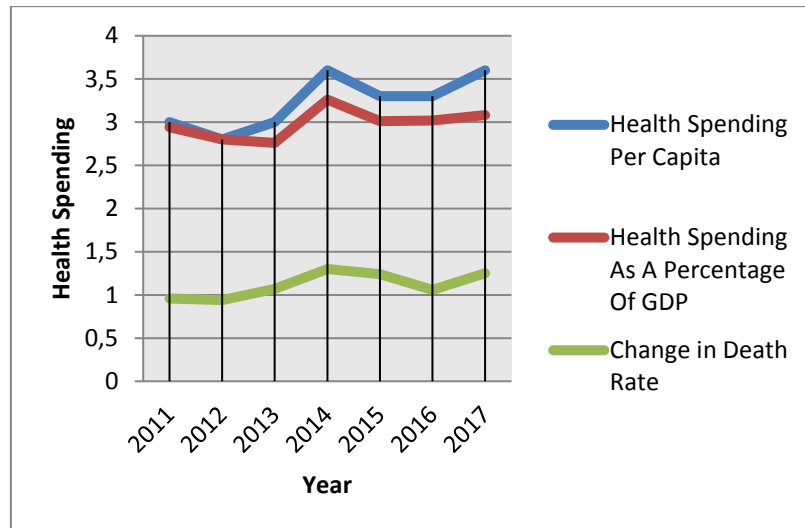


Fig. 4. Relationship between change in death rate and health expenditures

This graph clearly shows that when health expenditures are high the change in the death rate is also high i.e. the death rate itself falls. This suggests that higher health expenditures result in better provision of clean and safe food which in turn results in the fall of death rate.

3.7. Impact of death rate on Economic growth

The relationship between death rate and economic growth is quite simple. When death rate is higher the process of economic growth usually slows down. This happens because the people who were supposed to work and earn a living to make a contribution to the economic development of the country die before they can do so. This relationship is simple:



Fig. 5. How lower health expenditures results in reduces economic development

The lower the health expenditures, the higher is the supply of contaminated and unclean food. The higher is the supply of unclean food, the higher are the chances of health diseases. The higher are the chances of health diseases the higher is the death rate. The higher is the death rate, the lower is the availability of human capital. The lower is the availability of human capital, the lower is the pace of economic growth.

3.8. Efficiency of Labour- the second variable

Efficiency of labour is defined as the working capacity of the labour. It shows that how many hours the labour is ready to work and thus can make a contribution to the GDP of the country. The efficiency of labor is affected by the vigor, strength and health of the labour. The consumption of insecure and unclean food results in reducing the efficiency of the people in general, and the working class in particular. The use of insecure food creates two major problems :

a) Stunting

The reduced growth rate in human development is termed as stunted growth. Generally, it is known as stunting and nutritional stunting. It is one of the chief indicators of malnutrition (or more precisely undernutrition which results due to the consumption of unclean food). Stunting also indicated recurring infections, such as diarrhea and helminthiasis, in early childhood and even before birth, due to malnutrition during fetal development brought on by a malnourished mother.

b) Wasting

Wasting means that the strength in the body keeps on decreasing gradually. The working capacity of the people fall and they are thus unable to work efficiently. When the person doesn't have the physical or mental strength to perform a task, he cannot do it to perfection. When the working capacity falls that person cannot make his contribution to the GDP of the country.

3.9. Impact of food insecurity on stunting and wasting

Food insecurity means that the household or the individual is unable to get access to nutritious, health and clean food because of lack of its availability and also because of the lack of their personal resources.

According to the National Nutrition Survey of Pakistan food insecurity has three categories :

- i) Food Insecure Without Hunger.
- ii) Food Insecure With Hunger (Moderate)
- iii) Food Insecure With Hunger (Severe)

The food insecurity situation in Pakistan as found out by the National Nutrition Survey of Pakistan, 2016 is as follows :

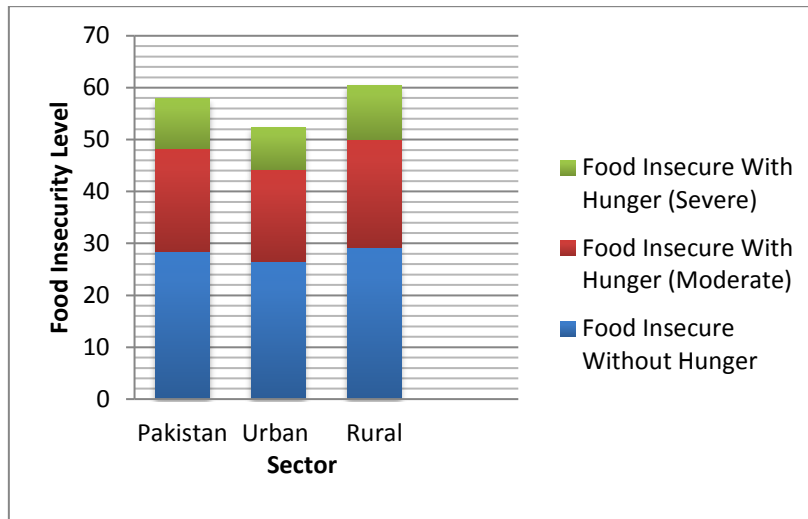


Fig. 6. Situation of food insecurity in Pakistan (2017) (Data from NNS)[2]

The food insecurity situation has shown no improvement since a very long time. Overall, 51% of the population was food insecure.

The next diagram shows the impact of food insecurity on stunting and wasting for 2017:

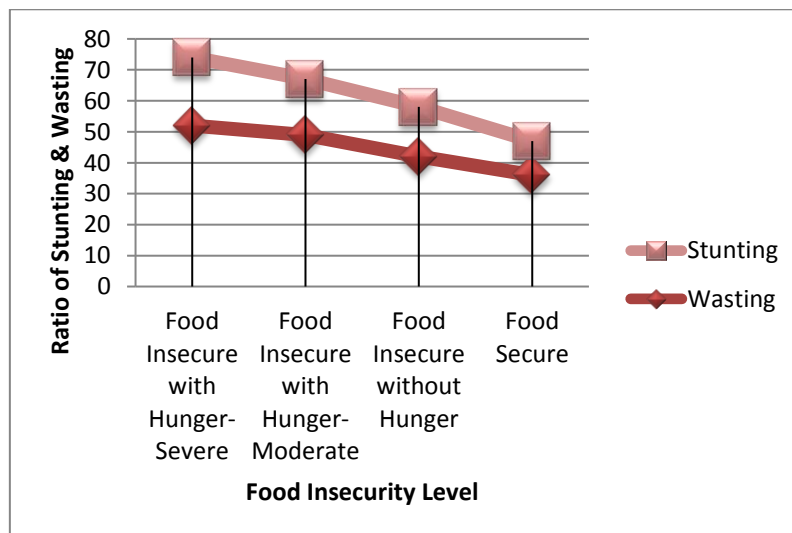


Fig. 7. Impact of food security on stunting & wasting (2017) (Data from NNS)[2]

This clearly shows that higher the levels of food insecurity the higher are the chances of stunting and wasting. Stunting and wasting result in reducing the efficiency of the labor which in turn slows down the process of economic development. This relationship can simply be shown as:

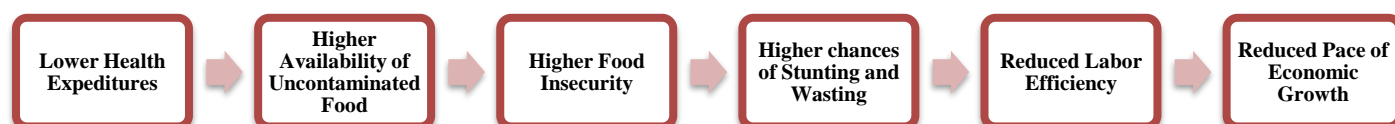


Fig. 8. How lower health expenditures result in reduced Economic growth

3.10. HEALTHY FOOD FOR ALL- a Burden on the Economy of Pakistan?

This is the question that now needs to be answered. It has been shown that Pakistan allocates a very small portion of its financial resources to the health sector. It does so, in order to save resources for other sectors of the economy. Analysis of the budget of Pakistan of 2016-17 clearly shows this:

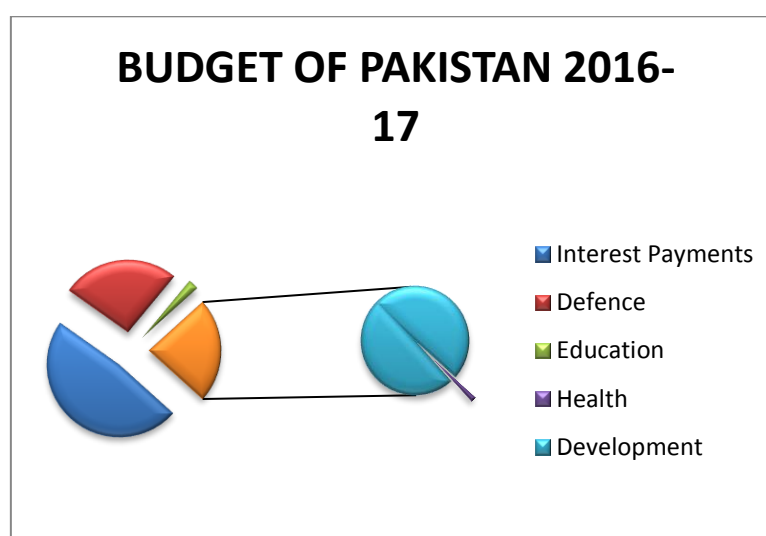


Fig. 9. Overview of budget of Pakistan (2016-17)

This clearly shows that a very little portion of the total budget is allocated to the health sector. The question is that why is the government neglecting the health sector. Why no importance is being given to the problem of food insecurity? Is the impact of health on economic development of a country is so small that the government is ready to sacrifice the health of the people? The answer is NO. The impact of healthy and nutritious diet is very prominent on the GDP or the economic development of the country.

For showing this the dietary intake of the population of Pakistan from year 2011 to 2017 shall be analyzed first. The contaminated food is lower in calories and doesn't add to the efficiency of the person. The table below shows the consumption of calories by a person per day:

Table 4. Consumption of kcal per person per day

YEAR	KILOCALORIES PER PERSON PER DAY
2011	175
2012	170
2013	167
2014	162
2015	167
2016	172
2017	174

Source: Data collected from World Bank: 2011-17 [21]

This shall now be compared with the analysis of the GDP per person for the same period. GDP or Gross Domestic Product is the monetary value of all the finished goods and services that are produced within the boundary of the country. The higher the GDP the higher is the rate of economic development. The GDP helps in finding out the GDP per person employed. The GDP per person employed is basically the productivity of labor or the growth rate of output per unit of labor. The analysis of GDP per person employed of Pakistan from year 2011 to 2017 is shown in the table below:

Table 5. GDP per person employed

YEAR	GDP PER PERSON EMPLOYED (constant 2011 PPP \$) (In hundreds)
2011	130
2012	129
2013	127
2014	124
2015	128
2016	133
2017	135

Source: Data collected from World Bank: 2011-17 [21]

The data of GDP per capita and calories per capita have been plotted simultaneously to show the impact of caloric intake on the efficiency of the labor and thus the GDP :

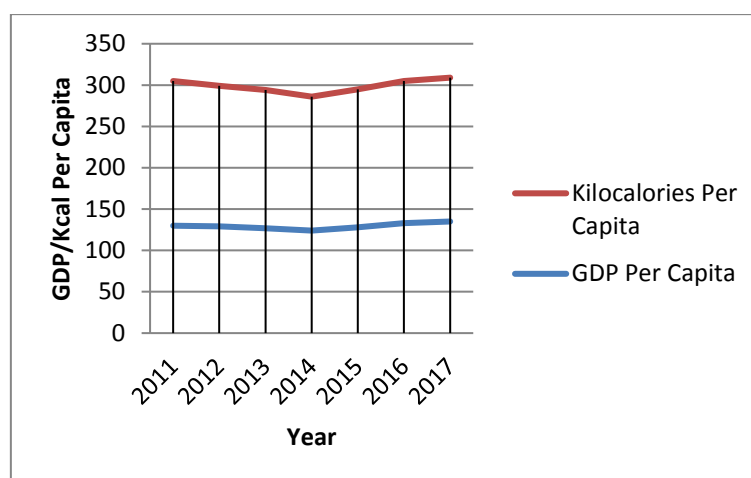


Fig. 10. Relationship between kcal per capita & GDP per capita

It clearly shows that in the years when the caloric intake was lower the GDP per capita or the contribution one person made to the economy of Pakistan was also lower. As unsafe food is less healthy and lower in useful nutrients and calories it doesn't add to the efficiency of the labor. This means that higher the consumption of uncontaminated food the lower the caloric and energy level. Lower the energy level, the lower is the efficiency of the labor. The lower is the efficiency of the labor, the lower is the pace of economic growth and GDP. This relationship can simply be stated as :



Fig. 11. How consumption of unsafe food results in slower pace of Economic growth

4. CONCLUSIONS

From the above analysis it is shown that Pakistan allocates a very small portion of its budget to ensure food security. In doing so, the health of the people of Pakistan is being adversely affected. They are unable to make their contribution to the economic development of Pakistan.

Hence, it can be concluded that:

'Providing healthy food to all is not a burden on the economy. Actually, it's not providing healthy food to all that is actually a burden on the economy of Pakistan'

If Pakistan reduces its spending on defense and other non-developmental sectors, and instead allocates it to the health sector to ensure food safety, then it will be beneficial for the economic development of the country and would not be a burden on it.

5. RECOMMENDATIONS

Following steps can be taken to ensure provision of safe and uncontaminated food to the masses:

1. The portion of health budget should be increased.
2. Separate departments should be set up to ensure the provision of safe and healthy food in all areas, both Urban and Rural.
3. Laws should be implemented so as to prevent the supply of contaminated food.
4. Use of allergens, contaminants and other low graded food material by cafes, restaurants and food stalls should be checked and stopped.
5. Only those restaurants or food suppliers should be allowed to function who meet the standards of hygiene as defined by the World Health Organization.

It is very much necessary to ensure the supply of clean and uncontaminated food if the government wants Pakistan to have a healthy and prosperous economy because:

'Only a healthy society can make a healthy economy'.

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Techno-Science Paper ID: 667777

