

Food Security in Algeria: An Analytical Study

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Abstract

The present research aims to investigate the state of food security in Algeria and its ability to confront internal and external shocks. A descriptive analytical approach was used to analyze various indicators and figures that reflect the food security state in Algeria. The results of this study show that food security in Algeria is at an acceptable level, but it is fragile and not strong enough to face shocks due to Algeria's heavy dependence on imports to meet its food needs, as well as not giving great importance to the farming segment as a major factor in achieving food security.

Keywords: *Food Security, Food Availability, Food Supply, Food Utilization, Algeria.*

Classification: Q110, Q180.

Introduction

The escalating global climate crisis, with its increasingly severe and unpredictable weather patterns, poses significant threats to food production systems and supply chains worldwide. Changes in rainfall, temperature extremes, droughts, and storms disrupt the delicate balance of agricultural productivity, raising concerns about food security across regions (Luqman et al., 2023). Compounding this issue, the COVID-19 pandemic caused unprecedented disruptions in international trade, labor shortages, and access to food, leading to increased vulnerability in many import-dependent nations (Erokhin & Gao, 2020). Countries with limited natural resources, such as water and fertile land, face even greater challenges when attempting to boost local food production in response to external shocks, often leading to unsustainable resource use.

Moreover, export restrictions imposed by major food-exporting countries during the pandemic exacerbated global food price volatility, especially in developing and emerging economies. By March 2020, 21 nations had implemented export controls, contributing to higher food prices and reduced access to essential commodities, particularly for vulnerable populations (Espitia et al., 2020). This price instability disproportionately affected lower-income households, exacerbating food insecurity in poorer regions. According to the International Monetary Fund, food prices surged by 20% during 2020, while the global economy contracted by 3.3% (Saboori et al., 2022).

In light of these global challenges, this study aims to examine food security in Algeria by analyzing key dimensions such as availability, access, utilization, and stability. It seeks to assess Algeria's current food security status and identify potential weaknesses and solutions. Given the ongoing economic and geopolitical instability, including the lasting effects of the COVID-19 pandemic and the Ukraine crisis, the issue of food security is particularly relevant for Algeria, a nation heavily reliant on food imports. This

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investigation offers crucial insights into the country's capacity to withstand external shocks and proposes strategies to enhance its resilience in the face of future crises.

Literature Review

In the early years, the food problem was basically characterized as a lack of sufficient supply to meet the population's requirements. However, after 1974, the term "food security" became more generally used, albeit it still largely related to the accessibility of food supply at the state level. With increasing reports of starvation and famine in the third world, even during phases of relatively abundant food supply, the focus in the 1980s shifted to addressing the food issue in terms of population access to food. Another transition happened in the 1990s, from seeing food security as primarily an issue of dietary energy sufficiency to adding financial, societal, nutritional, and psychological dimensions (Cafiero et al., 2014).

Food security emerged more than 50 years ago, during a period of international food crisis. Basically, it was concerned with guaranteeing food supply in terms of availability as well as the international and domestic cost stability of fundamental goods. This resulted due to agricultural commodity price volatility in the early 1970s. The evolving structure of the international food system was reflected in the emphasis placed on supply-related issues, which was blamed for the major events. The outbreak of large-scale starvation, starvation and other food shortages has called for a redefinition of the concept of food security, considering the crucial demands of individuals likely to be at risk or impacted by the situation (Berry et al., 2015).

The 1974 World Food established food security as the continued provision of the world's essential food supplies to support a sustained increase in food demand and to mitigate fluctuations in production and affordability. Nevertheless, no consideration was given to aspects of use or stability in this definition specifically, it is most likely implied by the phrase "at all times." Because macronutrient hunger was predicted to impact 25% of the global population in 1970 (Berry et al., 2015), the term accurately stresses the need for increasing production.

An improved knowledge of previous famine crises prompted a change in focus from a narrow supply-oriented approach that included demand as well. Sen's persuasive arguments focused on what was described as a deficiency of rights to adequate nutrition, or effective demand, rather than the absence of food itself. As a result, vulnerable populations were unable to get food, prompting the FAO to broaden the food security concept expanded to encompass ensuring access for disadvantaged populations to the available food supplies. This equilibrium between the demand and supply facets within the food security framework resulted in the formulation of an adjusted definition for food security as "ensuring that all people have both physical and economic access to the basic food that they require at all times." (Berry et al., 2015)

The Food and Agriculture Organization (2001) annual report on food security introduced a widely acknowledged concept. Food security is attained by ensuring that everyone has physical, social, and economic means to appropriate, safe, and nutritious food that satisfies their nutritional needs and preferences toward a healthy and active life consistently. At the 2009 World Summit on Food Security, a further fourth dimension, stability, was incorporated to provide a fast measure reflecting the capacity of food structures to resist crisis that may occur due to environmental or man-made interventions (Peng et al., 2019). As per FAO (2008) definition, food security entails ensuring that every person consistently has both the physical and economic means to obtain enough safe and nourishing food to satisfy their nutritional needs and food preferences, and to maintain a healthy balanced lifestyle over time.

As outlined by the FAO, food security encompasses four fundamental dimensions. Firstly, it involves the availability of both locally produced and internationally imported food supplies. Secondly, accessibility, encompassing the ability for food to physically reach clients via transportation facilities and the financial capacity of individuals to afford these provisions. This aspect also includes socio-cultural considerations to provide food that is adapted to the culture and involves societal safety nets for supporting disadvantaged populations. Thirdly, utilization, emphasizing an individual's capability to consume adequate quantities and quality of food necessary for a balanced and fulfilled life and to achieve their potential. Lastly, it encompasses stability, which formulate the capacity of the food chain structure in handling and recovering

from unforeseen disruptions. Complete food security necessitates the presence and fulfillment of all these dimensions (Peng et al., 2019). Further elaboration on these dimensions is provided below:

The physical availability of food pertains to the quantity of food produced, existing stocks as well as to the balance of trade, covering the supply dimension of food security.

Economic and physical access to food: Despite an ample food supply at the national or global scale, household food security remains uncertain. Consequently, policy focus has expanded to encompass incomes, expenditures, markets, and costs to effectively attain food security objectives due to concerns regarding inadequate food accessibility.

Food utilization: Typically defined as the body's process of extracting optimal nutrients from food, food utilization encompasses the achievement of adequate energy and nutrient intakes by individuals. This outcome relies on appropriate care and feeding practices, diverse dietary choices, effective food preparation and equitable food distribution within the household. Together with efficient biological utilization of ingested food, these factors determine a person's overall level of nutrition.

Availability, access and food utilization stability: Food insecurity persists despite acceptable food intake today if access to food is persistently inadequate, creating a persistent risk of nutritional decline. Variables including extreme weather environments, political uncertainty or economic challenges such as unemployment and increasing food costs can significantly affect people food security status (FAO, 2008).

The indicators of the FAO dimensions of food security are (FAO, 2016):

Availability

- Average dietary energy supply adequacy.
- Average value of food production.
- Share of dietary energy supply derived from cereals, roots, and tubers.
- Average protein supply.
- Average protein supply of animal origin.

Accessibility

- Percentage of paved roads over total roads.
- Road density.
- Rail line density.
- Domestic food price index.
- Prevalence of undernourishment.
- The poor's share of food expenditure.
- Depth of the food deficit.
- Prevalence of food inadequacy.

Utilization

- Access to improved water sources.
- Access to improved sanitation facilities.
- Percentage of children under 5 years of age affected by wasting.
- Percentage of children under 5 years of age who are stunted.
- Percentage of children under 5 years of age who are underweight.
- Percentage of adults underweight.

Stability/ Vulnerability

- Cereal import dependency ratio.
- Percent of arable land equipped for irrigation.
- Value of food imports over total merchandise exports.
- Political stability and absence of violence or terrorism.
- Volatility in the domestic food price index.
- Per capita food production variability.
- Per capita food supply variability.

Several investigations have conducted comparative analyses of food security across countries following the COVID-19 pandemic. Their estimations suggested that the economic crises caused by COVID-19 resulted in a rise of 211 million individuals experiencing food insecurity (Saboori et al., 2022).

This investigation attempts to provide insight into the concept of food security and the conditions for achieving it, and then to know the level of Algeria's achievement of its food security by detailing its various dimensions and indicators, searching for defect sites, and proposing solutions to them.

The importance of this study lies in the matter of food security, an increasingly critical topic facing the economies of countries at the present time, especially in light of the wave of sharp rises in food prices at the global level, in addition to the repercussions of the closure and the stumbling of import and export around the world due to the Corona pandemic.

The contribution of this study is that it deals with an important topic, which is food security in Algeria, where such studies are scarce, especially when talking about facing sudden shocks and crises by analyzing the following aspects (availability, access, utilization, and stability). The world is currently experiencing a period of instability due to the consequences of the Corona pandemic and the crisis in Ukraine, which is the world's most important exporter of grain, which makes any country, especially one that relies on imports, in instability state.

Most past research, including studies carried out by Rahmani (2020); Toudjjeni et al. (2022) and Saboori et al. (2022), in food security have indicated a negative impact of covid-19 endemic on global food security.

Rahmani (2020) attempted to portray the food security condition in Algeria using the World Food Security Index and to highlight the difficulties that impede Algeria from achieving its food security target. This study discovered that Algeria is a net food importer, and while food security performance in Algeria is continually increasing, it remains below the acceptable level. Furthermore, Algerian agriculture is marked by fragility and a systemic incapacity to fulfill local demand. It also discovered a lack of cohesion in policies, goals, projects, and finances.

Touidjeni et al. (2022) studied the opinions of Algerian households about their food security situation during COVID-19 endemic. This study reached that most households' perceptions are more likely to agree on the availability of food commodities. They weakly agree to the stability of food supply commodities in this period. The accessibility of food has been impacted in various manners, also their financial ability to obtain food was affected negatively. However, there was no deterioration in the overall nutritional quality and safety of Algeria's food supply during the outbreak.

Saboori et al. (2022) investigated the state of international food security in the context of covid-19 epidemic in 102 countries. They investigated the outbreak effects on food security in connection to price rise, urbanization, farmland, and economic growth in those nations. According to this study, nations with weaker food security are more prone to pandemics and inflation. They concluded that the rate of inflation had a significant negative influence on food security and affordability. Urbanization has a favorable impact on overall food security. However, farmland has a detrimental influence on food security.

- *Methods And Data Analysis*

The food security situation in Algeria was analyzed using the data found in the Food and Agriculture Organization's report for the year 2022, "Statistical Yearbook: World Food and Agriculture 2022." We took the Algerian data related to the indicators of the four dimensions of food security, monitored its development during the last 20 years, and compared it to international averages.

- *The Algeria Food Security Context*

In this component, we will discuss the situation of food security in Algeria by addressing the index of severe food insecurity and the index of severe and moderate food insecurity.

Table 1. Prevalence of Severe Food Insecurity (%)

Country	2014- 2016	2017-2019	2019-2021
The world	7.7	8.9	10.7
Algeria	13.0	9.3	6.2

Source: FAO, statistical yearbook, 2022, p. 265.

We note from the table that includes the prevalence of severe food insecurity in the period 2014–2021 that Algeria was prevalent in it by 13% in the period 2014–2016, which is a significant percentage and also much greater than the global average, which was at 7.7%, after which this percentage decreased until it reached 6.2% in the period 2019–2021, below the global average, which rose to 10.7%.

Table 2. The Prevalence of Moderate or Severe Food Insecurity (%)

Country	2014-2016	2017-2019	2019-2021
The world	21.8	24.8	28.1
Algeria	22.9	17.6	19.0

Source: FAO, statistical yearbook, 2022, p. 265.

We note from the table that includes the prevalence of moderate and severe food insecurity in the period 2014-2021 that the rate in Algeria was 22.9% in the period 2014-2016, which is a significant percentage as it represents about a quarter and is greater than the global average in that period, which was 21.8 %, after which this percentage decreased to 17.6% in the period 2017-2019, then it rose again to 19% in the period 2019-2021, which means an increase in the spread of food security, and we note that the rise was in the period that coincided with the instability in Algeria and the spread of the Corona pandemic as well, which negatively affected the food security situation in Algeria. Also, this period coincided with a large and sudden rise in food prices.

Food insecurity in Algeria, as we have seen in the two previous tables, is spreading at a very significant rate, and for more detail on its situation and understanding its causes and factors that contribute to its spread, we will address some indicators that reflect its dimensions (availability, access, utilization, and stability), in order to get a clearer picture of it.

Analysis of the State of Food Security in Algeria

In order to analyze the situation of food security in Algeria, we will discuss deeply the previously mentioned four pillars by measuring their level through a set of indicators.

Food Availability in Algeria

As we have seen previously, there are a set of available metrics to assess food availability in a particular country. We will address most of them to measure the availability of food in Algeria.

Index of average dietary energy supply adequacy

Table 3. Average Dietary Supply (Kcal Per Capita Per Day)

Period	2000-2002	2004-2006	2009-2011	2014-2016	2016-2018	2018-2020	2019-2021
The world	2712	2744	2840	2915	2942	2958	2963
Northern America and Europe	3425	3492	3467	3478	3511	3536	3537
Algeria	2938	3071	3268	3428	3402	3446	3479

Source: FAO, statistical yearbook 2022, p275.

The above table provides the average amount of food supplied to the world during the period 2000–2021. According to FAO statistics (2022), Algeria supplied 2938 calories per day for each person from 2000 to 2002. Notably, this quantity was higher than the global average quantity (2712 calories), which reflects a good life standard. However, it is less than the average food supplied by North America and Europe (3425 calories). The average amount of food supplied by Algeria increased to 3479 in the period 2019–2021. Remarkably, this average has always been higher than the global standard, and it almost matched the standard of food supplied by North America and Europe in the period of 2019–2021, which indicates a great improvement in life standards and nutrition in Algeria.

Index of food energy supplies derived from various food sources.

Table 4. Dietary Energy Supply by Commodity Group, 2020 (Kcal Per Capita Per Day)

Country	Cereals	Meat	Roots, tubers and pulses	Fish and seafood
The world	1317	240	226	39
Europe	1013	357	161	47
Algeria	1621	93	184	8

Source: FAO, statistical yearbook 2022, p285.

We note from the table that the quantity of food energy supplies for the year 2020 from various food sources (grains, meat, roots, tubers, pulses, and fish) in Algeria is greater compared to the global average and the average of Europe. This might be attributed to the nature of the dietary routine of Algerian society, which relies a lot on grains in its meals. As for the source of food like roots, tubers, and pulses, the food energy supplied in Algeria was less than the global and European average. As for the food energy supply of meat and fish in Algeria, it was very weak compared to the global and European averages, which reflect the quality of what Algerian individuals consume.

Protein Supply Index

Table 5. Average Protein Supply (G Per Capita Per Day)

Country	2000-2002	2004-2006	2009-2011	2017-2019
The world	72.3	73.4	77.1	81.7
Northern America and Europe	101.1	103	103.5	105.9
Algeria	77	83.3	87	89.3

Source: FAO, statistical yearbook 2022, p290.

We note from the above table that Algeria had an average protein supply of 77 grams per capita per day in the period 2000–2002, which is more than the global average, which amounted to 72.3. However, this quantity is below average as compared to Northern America and Europe, which accounted for 101.1 grams of protein per person per day. Notably, this average increased in Algeria to reach 89.3 in the period 2017-2019, which is higher than the global average, but still lower than the average in North America and Europe.

Index of protein supplies of animal origin

Table 6. Average Protein Supply of Animal Origin (G Per Capita Per Day)

Country	2000-2002	2004-2006	2009-2011	2017-2019
The world	26.4	27.7	29.8	32.1

Northern America and Europe	58.3	60.3	60.7	62.1
Algeria	19	21	23.7	24.3

Source: FAO, statistical yearbook 2022, p 290.

Table 6, indicates that in Algeria 19 grams of animal protein per capita per day were supplied between the period of 2000 and 2002. This quantity was less than the global average quantity of 26.4. Also, it was sharply below the average quantity supplied in Northern America and European countries of 58.3 grams per person a day. The average protein supply of animal origin in Algeria rose to 24.3 in the 2017-2019 period, but it has always remained below the global average.

Access To Food in Algeria

Based on this indicator, undernourishment, which is defined as food that contains fewer calories than the minimum dietary energy requirement, will be discussed. Inflation in food consumer prices will also be discussed in this section.

The index of the prevalence of undernourishment

Table 7. Prevalence of Undernourishment (%)

Country	2000-2002	2004-2006	2009-2011	2014-2016	2016-2018	2018-2020	2019-2021
The world	13.1	12.2	8.9	7.9	7.7	8.3	9.0
Algeria	8.0	6.7	4.3	2.8	2.7	<2.5	<2.5

Source: FAO, statistical yearbook 2022, p255.

Table 7, illustrates statistics on the spread of malnutrition in the world and Algeria during the period 2000-2021. Statistics showed that 08% of the population in Algeria suffered from undernourishment between the period of 2000 and 2002, which is lower than the global average of 13.1%. This percentage decreased gradually in Algeria to reach less than 2.5% in 2021. Remarkably, this percentage was always lower than the global average percentage, which indicates an improvement in life quality and the availability of food in Algeria between 2000 and 2021.

Domestic Food Price Level Index

Table 8. Inflation In Food Consumer Prices (Percentage)

year	2013	2014	2015	2016	2017	2018	2019	2020	2021
Algeria	3.2	3.9	4.7	3.4	5.0	3.4	-0.5	0.2	10

world	3.3	3.0	2.7	1.9	2.1	2.7	4.4	6.3	7.0
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Source: FAO, statistical yearbook 2022, p250.

The above table presents statistics on the inflation in consumer food prices in Algeria and the world during the period 2013–2021. It can be clearly seen that the rate was 3.2% for Algeria in 2013, which is almost equal to the global average rate. Later, it increased gradually in the subsequent years to reach 5% in 2017. Remarkably, food prices in Algeria exceeded the global average until 2019, then fell below it for 2 years, after which they recorded a sharp increase to reach 10% in 2021. Food prices in Algeria witnessed a huge rise, which negatively affected the level of food security through the impact of on the ability of families to acquire their food needs in quantity and quality, and this increase was for several reasons, the most important of which is the government imposing restrictions on imports in order to stimulate local production, as well as the large number of speculators in foodstuffs.

Table 9. Food Inflation (% Change, Year on Year)

period	Dec-21	Jan-22	Feb-22	Mar-22	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22
Algeria	12.0	11.9	13.1	13.6	15.7	13.4	17.3	14.5	14.5	11.3	-	-

Source: The world bank, food security update, December 2022, p15.

Table 9 includes monthly price inflation in 2022 compared to the same month in the year 2021 in Algeria. We note from it that the rate of inflation was high during all months, as it ranged between 11.3% and 17.3%. This reflects the surge increase in food prices, which started in 2021 and continued until 2022, at a fast pace, which negatively affects the ability of families to provide food needs in quantity and quality, and the effect is mainly on the middle and low-income classes, and thus the level of overall food security is negatively affected.

Food Utilization in Algeria

For analyzing the food use dimension in Algeria, we will only analyze the indicator of the prevalence of stunting in children under 5 years of age.

Table 10. Prevalence of Stunting in Children Under 5 Years (%)

Country	2000	2005	2010	2015	2016	2017	2018	2019	2020
World	33.1	30.7	27.7	24.4	23.8	23.4	22.9	22.4	22.0
Algeria	22.1	17.9	13.7	11.1	10.7	10.2	9.9	9.5	9.3

Source: FAO, statistical yearbook 2022, p300.

We note from Table 10, which includes the prevalence of stunting among children under the age of 5 years in the world and Algeria during the period 2000-2020, that stunting affected 22.1% of Algerian children in

2000, which is a very large and terrifying rate, i.e., about a quarter of Algerian children under the age of 5 were affected by this disease, and it was less than the global average, which was 33.1%. The rate decreased in Algeria, reaching 9.3% in 2020. The rate in Algeria was always below the global average, but it remains very large and reflects the extent of malnutrition that led to a slowdown in the growth of children's bodies from the normal rate.

Stability of Food Supply in Algeria

In order to study the stability of food supplies in Algeria, we will analyze three indicators: the proportion of dependence on grain imports, the proportion of farmland with watering systems, and the value of food imports compared to total merchandise exports.

Grain Import Dependency Ratio

Table 11. Cereal Import Dependency Ratio (%)

Country	2000-2002	2004-2006	2009-2011	2012-2014	2014-2016	2016-2018	2017-2019
Algeria	79.7	70.5	70.0	70.2	76.6	74.3	70.1

Source: FAO, statistical yearbook 2022, p280.

We note from the table that includes the percentage of dependence on grain imports in Algeria during the period 2000-2019 that the percentage is very high during the entire period, as it approached 80% during the period 2000-2002, then it fluctuated until it reached 70.1% in 2019. The percentage of dependence remains very large and poses a threat to food security in Algeria, especially since Algerian society depends a lot on grains in its diet if any global crisis occurs, such as what is currently happening in Ukraine, which is considered one of the most important exporters of wheat. This percentage raises the question of how the situation of grain cultivation in Algeria deteriorated to this extent until we reached this percentage of dependence on imports.

Percent of farmland with watering systems

Table 12. Share of Farmland Area with Watering Systems (%)

country	2000	2005	2010	2015	2016	2017	2018	2019	2020
Algeria	1.5	2.0	2.7	3.3	3.3	3.3	3.3	3.3	3.3

Source: FAO, statistical yearbook 2022, p99.

We note from the table that includes the percentage of irrigated areas compared to the total agricultural land in Algeria during the period 2000-2020 that the areas equipped with irrigation equipment were 1.5% of the agricultural land area in 2000, then it increased to reach 3.3% in 2020, but it remains a very weak percentage, especially in light of the scarcity and irregular rains, which threatens agricultural crops and negatively affects the stability of the food supply.

Our perusal of Tables 11&12 prompts us to question the status of the agricultural sector in Algeria. For this, we will present a table that includes the percentage of the agricultural sector's contribution to the GDP.

Table 13. The Percentage of Agriculture, Forestry and Fishing Value-Added in Total GDP (USD 2015 Prices) (%)

Country	2000	2005	2010	2015	2016	2017	2018	2019	2020
Algeria	7.3	8.1	9.7	11.6	11.4	11.3	11.6	11.8	12.6

Source: FAO, statistical yearbook 2022, p79.

Table 13 demonstrates the contribution of the agriculture, forestry, and fishing sectors to the GDP in Algeria during the period 2000–2020. The percentage was 7.3% in 2000, then it reached 12.6% in 2020; however, it remains weak compared to the agricultural capabilities that the country possesses, which, if invested in the best ways, will become one of the most important economic sectors contributing to the domestic product, as well as strengthening the country's food security and providing economic shields against external shocks.

For further clarification of the reasons for the weak contribution of the agricultural sector in Algeria, we will discuss the percentage of government spending on this strategic and essential sector for achieving food security.

Table 14. Government Expenditure on Agriculture, Forestry and Fishing in Total Outlays (%)

Country	2010	2015	2016	2017	2018
Algeria	2.0	3.5	3.0	3.2	2.9

Source: FAO, statistical yearbook 2022, p129.

Table 14 provides statistics of government spending on the agriculture, forestry and fishing sector in Algeria during the period 2010-2018. Budget allocated to this sector was 2% in 2010, 3.5% in 2015, and 2.9% in 2018, which is considered a very weak percentage compared to the importance of the agricultural sector in Algeria. Government spending on the agricultural sector contributes to better quantity and quality of agricultural food products, and reduces food prices, which results at increasing the level of food security in the country. As a country with the potential of Algeria, it is not conceivable that the support directed to the agricultural sector would be at this level, especially with the agricultural capabilities in the country, in addition to the negative effects of climate fluctuations such as drought and lack of rain. That is why the state must take more care of this sensitive sector to ensure food security and reduce the import bill for agricultural products, which are of high quality in Algeria.

Value of Food Imports to Total Merchandise Exports

Previously discussed indicators on food supply stability covered the indicator of the value of food imports out of the total imported commodities. However, this section will cover the evolution of food imports and exports in Algeria during the last two decades.

Table 15. Net Foreign Trade of Foodstuffs in Algeria (USD million)

Country	2000	2010	2020
Algeria	-2382	-5372	-7973

Source: FAO, statistical yearbook 2022, p219.

We note from Table 15 of the net foreign trade of foodstuffs in Algeria during the period 2000–2020 that the difference between food imports and exports has always been negative and of a large value. Food imports exceeded exports by \$2382 million in 2000. This rate has more than doubled since 2010, reaching

a difference of \$7973 million in 2020. This reflects two aspects. the first of which is that the value of Algeria's food exports is considerable, and the second is that this dependence on imports to meet food needs is constantly increasing and at a high pace, which reflects the fragility of food security in Algeria, which depends a lot on imports on an increasing basis, meaning that it is at the mercy of global stability and any external global shock will threaten it. In order to expand more on Algeria's food imports, we present details of imported foodstuffs in the year 2020 in the following table.

Table 16. Food Imports 2020 (USD million)

country	Fruit & vegetables	Cereals & preparations	Meat & meat preparations	Beverages	Fats & oils (except Butter)	Dairy products & eggs	Sugar & honey	Other food	Fish	All food
Algeria	721	3253	90	60	779	1507	802	1144	120	8474

Source: FAO, statistical yearbook 2022, p224.

Table 16 presents Algeria's food imports in 2020, which include a list of varieties such as meat, fish, cereals, vegetables, fruits, oils, sugar, dairy products, eggs, honey, and so on. The imported foodstuffs vary in quantity and quality according to the country's needs and demand. Some of them were imported in low volumes, such as meat and beverages, and others were imported in medium volumes, such as fish, vegetables, fruits, oils, and sugars. As for dairy products and eggs, the imported volume was significant and approached 18% of total food imports in 2020. The biggest share of food imports was cereals, which exceeded 38% of the total food imports in 2020. The large import of cereals includes wheat and corn, where the former was imported in abundance due to the nutritional pattern of Algerian society, which depends a lot on its consumption in their meals on a daily basis, while the latter was imported for animal consumption.

Discussion

The spread of food security in any place is conditional on the availability of four pillars: the availability of food in quantity and quality, the ability of individuals financially and economically to obtain food, the use of food according to an appropriate health system, and the stability of the food supply permanently. Food security data shows that food insecurity at the severe level is prevalent at 6.2% in Algeria, which is lower than the global average, but food insecurity at the moderate level is prevalent at 19%, which is a significant percentage. It should be noted that this percentage has increased in the last two years due to the instability of the political situation, the spread of the Corona pandemic, which caused stagnation and slowdown in many economies, and the closures that were applied in many countries, in addition to the large and sudden rise in food prices and speculation, especially in basic foodstuffs. All of these factors caused an imbalance in the supply of foodstuffs and negatively affected the purchasing power of individuals, which is in line with the investigation initiated by Saboori et al. (2022).

About food availability in Algeria, data showed a good level of dietary energy supply in the country; it was greater than the world average and close to the averages of Europe and North America. This is in agreement with the conclusions of Toudjeni et al. (2022). However, a focused analysis revealed that sources of food energy come from cereals, which is higher than the global and even European average, while obtaining food energy from roots, tubers, and pulses is low compared to the global average. As for food energy obtained from meat and fish, it is very weak. This was confirmed when considering the protein supply index in general and the animal source in particular. The data reflected weakness in the energy supply of this element, which is considered important in the diet and whose absence leads to malnutrition. Among the possible reasons for the lack of protein obtained from animal resources in the diet of the Algerian individual are high prices on the one hand and weak purchasing power due to inflation on the other. This aligns with the investigation of Saboori et al. (2022), and the study of Toudjeni et al. (2022).

Regarding access to food in Algeria, it is clearly seen through the undernourishment index that it is prevalent in Algeria by a small percentage, which reflects the quantitative availability of food in Algeria, and it matches what is found in the average food energy supply index, which was of a good value in Algeria. Data on the utilization of food in Algeria reflects that stunting of children below the age of 5 is prevalent at a significant rate, which reflects malnutrition due to the poor quality of the food energy supply that they get, especially from proteins (as we have seen previously), which has several causes such as high food prices, weak purchasing power and low awareness of the importance of protein in diets .

For the stability of food supply in Algeria, it is noticed that Algeria depends very much on cereal imports to meet its food needs. Also, it is evidenced that Algeria not only imports cereals but also many of its food and basic needs, with an increasing trend, this finding supports the view of Rahmani (2020) who said that Algeria is net food importers, which is considered an alarming trend for food security in this country. This is because any global shock poses a threat to the stability of its food supplies, such as the consequences of the Corona pandemic and the crisis in Ukraine, which is considered one of the most important cereal exporters in the world. In addition, it is found that the percentage of irrigated agricultural areas is very weak in Algeria, which means that the agricultural sector is highly dependent on precipitation, which is considered little and fluctuating in Algeria, and sometimes exposed to dry seasons, and this intersects with the result of Rahmani (2020), who said that the agriculture in Algeria characterized by weakness and its structural inability to meet local demand, which means the stability of food supplies in Algeria depends on precipitation, which is another challenge for food security in Algeria.

Conclusion

Food security is the quantitative and qualitative availability of food for individuals needs on an ongoing basis. In order for food security to prevail in a particular country, four conditions should be met: the availability of food in quantity and quality; the physical and economic ability to obtain it by individuals; a healthy way of food utilization; and the availability and permanent access to food. As for Algeria, food security is prevalent at a good level, but it is marred by some imbalances and is fragile and exposed to threats. In terms of imbalances, it lies in the lack of quality of the food supply and the lack of some of the main and important diet elements that affect the health of individuals, and this is due to weak purchasing power and high food prices. As for the threats, they include the heavy dependence on imports to meet food needs as well as the heavy dependence of the agricultural sector on precipitation, which makes the stability of food supplies dependent on the extent of global stability and precipitation. That is why policymakers in Algeria have to support the agricultural sector more by allocating more budget to this sector and striving to expand irrigated agricultural areas is the main key to strengthening food security in Algeria and protecting it from external shocks.

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