

## **The socio-economic situation, food and nutrition insecurity in the Republic of Benin during the COVID-19 pandemic**

**A situação socioeconômica, a insegurança alimentar e nutricional na República do Benim durante a pandemia do COVID-19**

**La situación socioeconómica, la inseguridad alimentaria y nutricional en la República de Benín durante la pandemia de COVID-19**

Received: 07/11/2022 | Reviewed: 07/19/2022 | Accept: 07/20/2022 | Published: 07/22/2022

**Aliou Toro Lafia**

ORCID: <https://orcid.org/0000-0001-9632-2722>  
Federal University of Uberlândia, Brazil  
E-mail: [torolafiaaliou@gmail.com](mailto:torolafiaaliou@gmail.com)

**Semako Ibrahim Bonou**

ORCID: <https://orcid.org/0000-0001-9547-6236>  
Federal University of Campina Grande, Brazil  
E-mail: [bonouibrahim@gmail.com](mailto:bonouibrahim@gmail.com)

**John Nonvignon Bossis Honfoga**

ORCID: <https://orcid.org/0000-0003-1478-1023>  
State University of Southwestern Bahia, Brazil  
E-mail: [jnbossis91@hotmail.com](mailto:jnbossis91@hotmail.com)

**Tankpinou Richard Ketounou**

ORCID: <https://orcid.org/0000-0001-6404-7746>  
State University of Southwestern Bahia, Brazil  
E-mail: [rketounou@gmail.com](mailto:rketounou@gmail.com)

**Aïssatou Kora Bani Zimé**

ORCID: <https://orcid.org/0000-0003-4789-5385>  
University of Parakou, Benin  
E-mail: [korabanizimeaissatou@gmail.com](mailto:korabanizimeaissatou@gmail.com)

### **Abstract**

Food and nutrition security is about promoting rights to access sufficient, quality food without compromising other essential needs. The measures of social distancing, the paralysis of non-essential economic activities imposed to control the pandemic of COVID-19 caused disruptions in food production and supply chains worldwide. The study aimed to assess the food and nutrition security status of households in the Republic of Benin and also the socioeconomic situation during the pandemic. The results showed that the COVID-19 pandemic increased the levels of poverty and food insecurity in Benin. Overall more than 50% of the participants were living on only one minimum wage or less and more than 50% were living in acute food insecurity including families with children. The central region of the country was the most affected by food insecurity followed by the northern region. There was a lack or low intervention of regional, economic and social policies to maintain jobs and guarantee food for the affected families. More governmental or non-governmental policies are needed to ensure food and nutritional security for low-income families.

**Keywords:** Restriction; Unemployment; Food availability.

### **Resumo**

A segurança alimentar e nutricional consiste de promover direitos ao acesso a alimentos de qualidade, em quantidade suficiente, sem comprometer outras necessidades essenciais. As medidas do distanciamento social, a paralisação das atividades econômicas não essenciais impostas para controlar a pandemia do COVID-19 causaram interrupções nas cadeias de produção e suprimentos de alimentos no mundo inteiro. O estudo teve com objetivo de avaliar o estado da segurança alimentar e nutricional das famílias da República do Benim e também a situação socioeconômica durante a pandemia. Os resultados mostraram que a pandemia do COVID-19 aumentou os níveis de pobreza e de insegurança alimentar no Benim. Em geral mais de 50% dos participantes viviam com apenas até um salário mínimo e mais de 50% viviam em insegurança alimentar aguda inclusive famílias com crianças. A região centro do país foi a mais afetada pela insegurança alimentar seguida da região norte. Houve faltas ou baixas intervenções políticas regionais,

econômicas e sociais para manter os empregos e garantir alimentos para as famílias afetadas. É necessário mais políticas governamentais ou não governamentais que garantem a segurança alimentar e nutricional das famílias de baixa renda.  
**Palavras-chave:** Restrição; Desemprego; Disponibilidade de alimentos.

### Resumen

La seguridad alimentaria y nutricional consiste en promover el derecho a acceder a una alimentación suficiente y de calidad sin comprometer otras necesidades esenciales. Las medidas de distanciamiento social, la paralización de las actividades económicas no esenciales impuestas para controlar la pandemia de COVID-19 provocaron interrupciones en la producción de alimentos y en las cadenas de suministro en todo el mundo. El estudio pretendía evaluar el estado de seguridad alimentaria y nutricional de los hogares de la República de Benín y también la situación socioeconómica durante la pandemia. Los resultados mostraron que la pandemia del COVID-19 aumentó los niveles de pobreza e inseguridad alimentaria en Benín. En general, más del 50% de los participantes vivían con un salario mínimo o menos y más del 50% vivían en situación de inseguridad alimentaria aguda, incluidas las familias con niños. La región central del país fue la más afectada por la inseguridad alimentaria, seguida de la región norte. Hubo una falta o escasa intervención de las políticas regionales, económicas y sociales para mantener los puestos de trabajo y asegurar la alimentación de las familias afectadas. Se necesitan más políticas gubernamentales o no gubernamentales para garantizar la seguridad alimentaria y nutricional de las familias con bajos ingresos.

**Palabras clave:** Restricción; Desempleo; Disponibilidad de alimentos.

## 1. Introduction

Food is part of the basic needs of human beings. It is directly linked to health promotion. When properly guaranteed, it promotes safe nutrition, contributing to the body's maintenance, growth and development and a good quality of life. (Wolfson & Leung, 2020; Nascimento, 2018). Having an adequate and healthy diet is the right of every human being, from the point of view of health, respect for food culture, economic, social and environmental sustainability, availability and permanent access to quality food (Guerra et al., 2019).

Food and nutrition security consists of promoting rights to access quality food, in sufficient quantity, without compromising other essential needs. (Vasconcellos & Moura, 2018). The social distancing measures, the interruption of all non-essential economic activities imposed by the authorities to control the COVID-19 pandemic have caused disruptions in most food production and supply chains worldwide (Farcas et al, 2020; Jribi et al., 2020). All these measures taken affected food security and nutrition worldwide during the pandemic of COVID-19 especially in developing countries (Ahmed et al., 2021). In 2020, due to the aggravating impact of the COVID-19 pandemic, the World Food Program (WFP) has estimated that around 272 million people live in acute food insecurity and 97 million people have suffered from chronic food insecurity worldwide (WFP, 2020). The lack of food, however, is a reality, which occurs not because of the difficulty in producing food, but mainly, a socioeconomic problem caused by the poor distribution of wealth (Nascimento, 2018).

Even before the COVID-19 pandemic, when talking about hunger, Africa is the continent that is always at the top of the list, where a large part of the population is poor, suffers from malnutrition and even deaths caused by lack of food. During the pandemic, an estimated 68.1 million urban people were at risk of acute food insecurity in Sub-Saharan Africa in 2020. This includes 22 million in Central Africa, 16 million in West Africa, 15.7 million in East Africa and 14.4 million in southern Africa, representing 15 percent of the region's total urban populations (FAO, 2022).

Food production and distribution chains have been compromised and access to food has been reduced in different countries of the world, mainly developing countries, where social and economic inequality is high (Pereira & Oliveira, 2020). Benin is one of the West African countries where several nutritional problems coexist due to food insecurity (FAO, 2021). Given the impact of the pandemic on the world economy and food supply, the objective of this work was to evaluate the food security of families in the Republic of Benin.

## 2. Methodology

The work was carried out during the COVID-19 pandemic in Benin, a West African country with approximately 12 million inhabitants (2020). A social survey to analyze the quality of life of Beninese families during the pandemic. The survey was conducted in the year 2021, from September to October during the COVID-19 pandemic. In this study, the socioeconomic situation and food and nutritional security of the population of the last 3 three months was evaluated following the methodology adapted from Santos et al. (2014).

Data collection was carried out remotely based on a questionnaire on Google Form and applied in different locations of the country (north, center and south). In order to obtain homogeneous data, in addition to urban areas, the questionnaire was also applied in some rural cities. The questionnaires were carried out with participants over 18 years of age. The sample size varied with the question why some respondents chose not to answer some of the questions. The collected data was processed in Microsoft Excel 2010.

## 3. Results and Discussion

The results of the evaluation of age, marital status and level of education of the participants are shown in Table 1. The results showed that in the northern region of the country, young people (20 to 30 years old) participated more in the research, representing 55.64%. In the southern and central regions of the country in the same age group (20 to 30 years old) there was a participation of 10.66% and 37.69% respectively. In general, most participants were over 40 years old (36.62%), between 30 and 40 years old (28.05%) and between 20 and 30 years old (35.32%). As can be seen in Table 1, the highest level of education was found in the southern region where 41.80% of respondents have higher education, followed by the north with 39.85% and the center with 16.15%. A few decades ago, social perceptions of school in Africa in general expressed the rejection of school by communities. Nonetheless, today we see a great interest in education on the part of society because most parents aspire to educate their children in a modern school environment (Mohamed, 2022). There is strong growth in the schooling of the population in Sub-Saharan Africa, especially in francophone West Africa (Lauwerier, 2019).

Regarding the marital status, in general 61.82% of the participants were married, 88.46% in the center, 62.30% in the south and 35.34% in the north. This result was well expected, in Beninese culture, especially in the southern and central regions, whoever has the right to answer such a survey is the "head of the family", as he is called in the local expression, the father of the family, who takes decisions, which controls any inbound and outbound activity within the house. In the northern region, most of the time, young people, depending on the marital situation, assume family responsibility, but it does not give them the power to make a decision without consulting their parents.

**Table 1:** Evaluation of the study's audience.

Variables	South		Center		North		Total	
	n	%	n	%	n	%	n	%
<b>Age years)</b>								
20 to 30	13	10.66	49	37.69	74	55.64	136	35.32
30 to 40	52	42.62	24	18.46	32	24.06	108	28.05
over 40	57	46.72	57	43.85	27	20.30	141	36.62
<b>Marital status</b>	<b>n</b>	<b>%</b>	<b>n</b>	<b>%</b>	<b>n</b>	<b>%</b>	<b>n</b>	<b>%</b>
Married	76	62.30	115	88.46	47	35.34	238	61.82
single	29	23.77	8	6.15	66	49.62	103	26.75
Divorced	10	8.20	5	3.85	14	10.53	29	7.53
widower	7	5.74	two	1.54	6	4.51	15	3.90
<b>Education Level</b>	<b>n</b>	<b>%</b>	<b>n</b>	<b>%</b>	<b>n</b>	<b>%</b>	<b>n</b>	<b>%</b>
never studied	22	18.03	50	38.46	25	18.80	97	25.19
Complete primary education	15	12.30	9	6.92	5	3.76	29	7.53
incomplete elementary school	11	9.02	12	9.23	14	10.53	37	9.61
Complete high school	11	9.02	13	10.00	14	10.53	38	9.87
Incomplete high school	12	9.84	25	19.23	22	16.54	59	15.32
University education	51	41.80	21	16.15	53	39.85	125	32.47

Source: Authors (2022).

Table 2 shows the socioeconomic situation of Beninese families during the pandemic. The results of the survey showed that in the Republic of Benin on average each family has 9 people. This number may vary depending on the location and religion of the family. In inland cities where people's education is low and where they have land for family farming, most families are polygamous and families are larger. Muslims are also polygamous, religion allows polygamy (Purwanto et al., 2001) and also the number of people in these families can exceed the national average.

The unemployment rate during the COVID-19 pandemic was high in Benin, reaching more than 68% of participants, being higher in the center of the country with 85.38%, in the north 72.93% and 46.72% in the south. The unemployment rate was lower in the south because most institutions and companies are concentrated in the south. According to Libreinfo (2022) the minimum wage in the Republic of Benin is 40,000 Western CFA Francs, which is equivalent to around 70 US dollars at the current rate. During the pandemic in every family of 9 people in the Republic of Benin, only one person is employed and 54.55% of families live on up to one minimum wage, 16.10% on up to two wages and 29.35% on more than two salary. This high unemployment rate can be explained by the confinement of the population, a decision by health authorities to prevent the spread of the virus. Most businesses and businesses have closed down by laying off employees. The increase in the unemployment rate during the pandemic reached the entire world, even developed countries, such as the United States (Ganong, Noel & Vavra, 2020), Italy (Pompili et al., 2022), Canada (Shafer, Cheibling & Milkie, 2020) among several. The expansion of the pandemic in Brazil increased the risk of poverty and social impacts (Silva et al., 2021). The increase in unemployment caused by the pandemic had a negative impact on the population's family income. In the Republic of Benin around 14% of the population received financial aid from governmental or non-governmental programs. In neighboring Nigeria, the economic crisis caused by the pandemic has been tackled by the government providing financial assistance to companies to keep employees.

**Table 2:** Assessed on the socioeconomic status of families.

Location		South		Center		North		Total	
Family		n	Average	n	Average	n	Average	n	Average
How many people do you have in your house, including you?		906	8	1015	9	969	8	2890	9
How many people under the age of 18 are in your household?		282	3	515	4	374	3	1171	4
How many people over 60 are in your house?		105	1	81	1	100	1	286	1
		<b>n</b>	<b>%</b>	<b>n</b>	<b>%</b>	<b>n</b>	<b>%</b>	<b>n</b>	<b>%</b>
Are you an employee?	Yes	65	53.28	19	14.62	36	27.07	120	31.17
	No	57	46.72	111	85.38	97	72.93	265	68.83
		<b>n</b>	<b>Average</b>	<b>n</b>	<b>Average</b>	<b>n</b>	<b>Average</b>	<b>n</b>	<b>Average</b>
How many employed people do you have in your family?		231	2	75	1	106	1	412	1
		<b>n</b>	<b>%</b>	<b>n</b>	<b>%</b>	<b>n</b>	<b>%</b>	<b>n</b>	<b>%</b>
What is the family income?	Up to 1 salary	49	40.16	80	61.54	81	60.90	210	54.55
	Up to 2 salaries	16	13.11	22	16.92	24	18.05	62	16.10
	More than 2 salaries	57	46.72	28	21.54	28	21.05	113	29.35
		<b>n</b>	<b>%</b>	<b>n</b>	<b>%</b>	<b>n</b>	<b>%</b>	<b>n</b>	<b>%</b>
Do you receive financial aid from the government or another?	Yes	31	25.41	14	10.77	12	9.02	57	14.81
	No	91	74.59	116	89.23	121	90.98	328	85.19

Source: Authors (2022).

The results of the food and nutrition security assessment of Beninese households during the COVID-19 pandemic are presented in Tables 3 and 4. The results showed that household food insecurity was alarming during the pandemic in all regions of the country. The food insecurity situation was worse in the center of the country than in the southern and northern region. In the central region of Benin, during the pandemic 75.38% of the participants were concerned that the food in their household would run out before they could afford to buy more food, while in the north it was 60.15% and in the south 33.61%. In the center of the country 73.80% of the participants have run out of money to have a varied diet and overall 58.44% of the

participants have had this problem. As the pandemic increased the more businesses closed their doors and the prices of some foods went up, it was evident that many people would be in financial difficulties due to the increased demand for food and high unemployment (Ahn & Norwood, 2021).

**Table 3:** Assessment of household food and nutrition security during the last three months.

Questions	South		Center		North		Total		
	n	%	n	%	n	%	n	%	
<b>1</b>	Did you worry that the food in your house would run out before you were able to buy more food?								
	Yes	41	33.61	98	75.38	80	60.15	219	56.88
	No	81	66.39	32	42.62	53	39.85	166	43.12
<b>2</b>	Did you run out of food before you had the money to buy more?								
	Yes	44	36.07	96	73.85	81	60.90	221	57.40
	No	78	63.93	34	26.92	52	39.10	164	42.60
<b>3</b>	Did you run out of money to have a varied diet?								
	Yes	48	39.34	95	73.08	82	61.65	225	58.44
	No	74	60.66	35	26.92	51	38.35	160	41.56
<b>4</b>	In your home, have you or someone in your family ever reduced the amount of food at meals because there was not enough money to buy food?								
	Yes	47	38.52	95	73.08	59	44.36	201	52.21
	No	75	61.48	35	26.92	74	55.64	184	47.79
<b>5</b>	Have you or anyone in your family ever felt hungry but didn't eat because you couldn't buy enough food?								
	Yes	40	32.79	86	66.15	54	40.60	180	46.75
	No	82	67.21	44	33.85	79	59.40	205	53.25
<b>6</b>	Did you lose weight because you didn't have enough food in your house?								
	Yes	37	30.33	88	67.69	37	27.82	162	42.08
	No	85	69.67	42	32.31	96	72.18	223	57.92
<b>7</b>	Have you or someone in your family ever gone a whole day without eating or just one meal because you didn't have food at home?								
	Yes	91	74.59	87	66.92	36	27.07	214	55.58
	No	31	25.41	43	33.08	97	72.93	171	44.42

Source: Authors (2022).

Household food insecurity is defined as the limited or uncertain ability to acquire adequate food for one or more family members (Anderson, 1990). The results showed that during the pandemic more than half the population had a serious problem with food security in Benin. More than 50% of the participants have or someone in the family has gone a whole day without eating or just had a meal because they had little or no food at home. The food insecurity situation was more serious in the central region of the country where more than 67% of the participants confirmed that they had lost weight because they did not have enough food at home, while the general average was 42%. In the center of the country, 73% confirmed that in the family there was a decrease in the amount of food at meals, because there was not enough money to buy food, in the north it

was 44% and in the south it was 47%. Ahmed et al. (2021) assessed the food security of rural Bangladeshi households during the pandemic. Results showed that over 80% of households experienced mild to severe food insecurity and over 50% of households experienced moderate to severe food insecurity. In a survey carried out in the State of Santa Catarina (Brazil), the majority (93.9%) of the participants had satisfactory eating habits during the pandemic (Silva Menegotte et al., 2021). The pandemic of COVID-19 threatened food security even in developed countries. In the United States during the pandemic, families with incomes below \$75.00 who were unemployed at some point, 31% reported food insecurity and 33% reported eating less due to financial constraints (Raifman et al., 2020). During the pandemic, 10.5% (13.8 million) of US households were food insecure at some point in 2020 (USDA, 2022).

West Africa is highly dependent on food (Arouna et al., 2020). As a consequence, food insecurity during the pandemic is associated with a 257% higher risk of anxiety and a 253% higher risk of depression (Fang, Thomsen & Nayga, 2021). Interventions to fight poverty and food insecurity have been carried out in a weak and heterogeneous way in developing countries, not reaching the resolution of social inequality. Policies to encourage the production and distribution of food to socially and economically vulnerable groups were adopted in several countries with the aim of providing food security during the pandemic (Pereira & Oliveira, 2020). Italy is one of the countries that recorded the most cases of coronavirus and this made 16.2% of Italian households food insecure during the pandemic (Dondi et al., 2020).

**Table 4:** Family food security during the last three months specifically for under 18.

Questions	South		Center		North		Total		
	n	%	n	%	n	%	n	%	
<b>1</b>	Did you have to rely on just a few types of food to feed residents under 18 because the money ran out?								
Yes	19	15.57	89	68.46	51	38.35	159	41.30	
No	102	83.61	42	32.31	82	61.65	226	58.70	
<b>2</b>	Could you not offer a resident under the age of 18 healthy food because you had no money?								
Yes	22	18.03	87	66.92	53	39.85	162	42.08	
No	100	81.97	43	33.08	80	60.15	223	57.92	
<b>3</b>	Has any resident under the age of 18 not eaten enough because they had little food at home?								
Yes	17	13.93	87	66.92	48	36.09	152	39.48	
No	105	86.07	43	33.08	85	63.91	233	60.52	
<b>4</b>	Has a resident under the age of 18 ever missed a meal because there was no money to buy food?								
Yes	18	14.75	85	65.38	34	25.56	137	35.58	
No	104	85.25	45	34.62	99	74.44	248	64.42	
<b>5</b>	Has any resident under the age of 18 been hungry, but you just couldn't buy more food?								
Yes	16	13.11	84	64.62	40	30.08	140	36.36	
No	106	86.89	46	35.38	93	69.92	245	63.64	
<b>6</b>	Did any resident under the age of 18 eat only one meal a day, or go without food for an entire day because there was no money to buy food?								
Yes	104	85.25	86	66.15	25	18.80	215	55.84	
No	18	14.75	44	33.85	108	81.20	170	44.16	

Source: Authors (2022).

The results in Table 4 related to children under 18 years of age showed that household food insecurity affected the nutritional issue of school-age children in Benin. During the pandemic in more than 50% of the families of the participants there were children who had only one meal or went all day without eating. There were children under 18 years old who did not eat enough, because they had little food at home, this happened in more than 66% (more than the general average, which was around 40%) of the families in the central region of Benin. More than 40% of participants had problems offering healthy food to those under 18 during the pandemic. Children from low-income families, who are already at greater health risk than children from high-income families, were further harmed by nutritional deficiencies (Dunn, 2020). The quality of children's diets will have declined during the pandemic (Campbell & Wood, 2021). In Brazil, in some localities, basic food baskets were distributed to families of children enrolled in schools (Faustino & Castejon, 2021). In Mexico in 2020, during the pandemic, more than 24% of families with children did not have food security (Gaitán-Rossi et al., 2020). The United States was also hit, more than 4.6 million low-income children received free meals and snacks through their early childhood education programs through support from the Federal Food Program for Children and Adults (Catarina, 2021). Food support programs have helped close gaps in children's access to healthy meals during the pandemic (Pool et al., 2021).

#### 4. Conclusion

Global and local economic and food system disruptions due to the COVID-19 pandemic have increased food and nutrition insecurity among Beninese families. Low-income and disadvantaged families have had their food problems worsened during the pandemic. A supportive policy is needed that should focus on the implementation of immediate sustainable food security strategies to prevent hunger and malnutrition among families in the Republic of Benin. Food insecurity can have serious public health consequences. There is a need for government public policies aimed at the identification and nutritional rehabilitation of malnourished children.

#### References

- Ahmed, F., Islam, A., Pakrashi, D., Rahman, T., & Siddique, A. (2021). Determinants and dynamics of food insecurity during COVID-19 in rural Bangladesh. *Food Policy*, 101, 102066. <https://doi.org/10.1016/j.foodpol.2021.102066>
- Ahn, S., & Norwood, F. B. (2021). Measuring food insecurity during the COVID-19 pandemic of spring 2020. *Applied Economic Perspectives and Policy*, 43(1), 162-168. <https://doi.org/10.1002/aep.13069>
- Anderson, S. A. (Ed.). (1990). Core indicators of nutritional state for difficult-to-sample populations. *The Journal of nutrition*, 120(suppl\_11), 1555-1600. [https://doi.org/10.1093/jn/120.suppl\\_11.1555](https://doi.org/10.1093/jn/120.suppl_11.1555)
- Arouna, A., Soullier, G., Del Villar, P. M., & Demont, M. (2020). Policy options for mitigating impacts of COVID-19 on domestic rice value chains and food security in West Africa. *Global Food Security*, 26, 100405. <https://doi.org/10.1016/j.gfs.2020.100405>
- Campbell, H., & Wood, A. C. (2021). Challenges in feeding children posed by the COVID-19 pandemic: a systematic review of changes in dietary intake combined with a dietitian's perspective. *Current Nutrition Reports*, 10(3), 155-165. <https://doi.org/10.1007/s13668-021-00359-z>
- Catarina W. Baueret ai. "Desvendando uma rede de segurança: alimentando crianças pequenas durante o COVID-19", *American Journal of Public Health* 111, no. 1: pp. 116-120. <https://doi.org/10.2105/AJPH.2020.305980>
- Dondi, A., Candela, E., Morigi, F., Lenzi, J., Pierantoni, L., & Lanari, M. (2020). Parents' perception of food insecurity and of its effects on their children in Italy six months after the COVID-19 pandemic outbreak. *Nutrients*, 13(1), 121. <https://doi.org/10.3390/nu13010121>
- Dunn, C. G., Kenney, E., Fleischhacker, S. E., & Bleich, S. N. (2020). Feeding low-income children during the Covid-19 pandemic. *New England Journal of Medicine*, 382(18), e40. [10.1056/NEJMp2005638](https://doi.org/10.1056/NEJMp2005638)
- Fang, D., Thomsen, M. R., & Nayga, R. M. (2021). The association between food insecurity and mental health during the COVID-19 pandemic. *BMC public health*, 21(1), 1-8. <https://doi.org/10.1186/s12889-021-10631-0>
- Farcas, A. C., Galanakis, C. M., Socaciu, C., Pop, O. L., Tibulca, D., Paucean, A., & Socaci, S. A. (2020). Food Security during the Pandemic and the Importance of the Bioeconomy in the New Era. *Sustainability*, 13(1), 150. <https://doi.org/10.3390/su13010150>
- Faustino, A. D. J. P., & Castejon, L. V. (2021). Alimentação de crianças durante a pandemia e as dificuldades dos responsáveis. *Research, Society and Development*, 10(7), e34810716811-e34810716811. <http://dx.doi.org/10.33448/rsd-v10i7.168111>



- Food and Agriculture Organization of the United Nations-WFP. 2021. Plant breeding programs in Benin. Disponível em: <http://www.fao.org/in-action/plant-breeding/our-partners/africa/benin/en/>.
- Food and Agriculture Organization of the United Nations-WFP. 2022. Food insecurity a real concern among the urban poor in Sub-Saharan Africa following pandemic - new report shows. <https://www.wfp.org/news/food-insecurity-real-concern-among-urban-poor-sub-saharan-africa-following-pandemic-new-report>.
- Gaitán-Rossi, P., Vilar-Compte, M., Teruel, G., & Pérez-Escamilla, R. (2021). Medidas de insegurança alimentar e estimativas de prevalência durante a pandemia de COVID-19 em uma pesquisa transversal repetida no México. *Nutrição em saúde pública*, 24 (3), 412-421. <https://doi.org/10.1017/S1368980020004000>
- Ganong, P., Noel, P., & Vavra, J. (2020). US unemployment insurance replacement rates during the pandemic. *Journal of Public Economics*, 191, 104273. <https://doi.org/10.1016/j.jpubeco.2020.104273>
- Guerra, L. D. D. S., Cervato-Mancuso, A. M., & Bezerra, A. C. D. (2019). Alimentação: um direito humano em disputa-focos temáticos para compreensão e atuação em segurança alimentar e nutricional. *Ciência & Saúde Coletiva*, 24, 3369-3394. <https://doi.org/10.1590/1413-81232018249.20302017>
- Jribi, S., Ben Ismail, H., Doggui, D., & Debbabi, H. (2020). COVID-19 virus outbreak lockdown: What impacts on household food wastage? *Environment, Development and Sustainability*, 22(5), 3939-3955. <https://doi.org/10.1007/s10668-020-00740-y>
- Lauwerier, T. (2019). L'éducation de base en Afrique de l'Ouest: quelles potentialités de l'approche de Freire? L'éducation en débats: *analyse comparée*, 10(1), 84-100. <https://archive-ouverte.unige.ch/unige:142269>
- Libreinfo. 2020. Bénin: En 2023, le SMIG va passer de 40 000 à 52 000 FCFA. Disponível em: [https://libreinfo.net/benin-smig/#:~:text=Le%20Salaire%20minimum%20interprofessionnel%20garanti%20\(SMIG\)%2C%20au%20B%20C%20A9nin%20n,consensuelle%20par%20toutes%20les%20parties](https://libreinfo.net/benin-smig/#:~:text=Le%20Salaire%20minimum%20interprofessionnel%20garanti%20(SMIG)%2C%20au%20B%20C%20A9nin%20n,consensuelle%20par%20toutes%20les%20parties)
- Mohamed, M. A. (2022). Repenser l'éducation et la pédagogie dans une perspective africaine. Cultures africaines et implication des parents à l'école: quelles articulations? Ed.2022, 67.
- Nascimento, S. P. (2018). Desperdício de alimentos: fator de insegurança alimentar e nutricional. *Segurança Alimentar e Nutricional*, 25(1), 85-91. <https://doi.org/10.20396/san.v25i1.8649917>
- Ozili, P. K. (2020). Covid-19 pandemic and economic crisis: The Nigerian experience and structural causes. *Journal of Economic and Administrative Sciences*, 34(4), 401-418. <https://doi.org/10.1108/JEAS-05-2020-0074>
- Pereira, M., & Oliveira, A. M. (2020). Poverty and food insecurity may increase as the threat of COVID-19 spreads. *Public health nutrition*, 23(17), 3236-3240. <https://doi.org/10.1017/S1368980020003493>
- Pompili, M., Innamorati, M., Sampogna, G., Albert, U., Carmassi, C., Carrà, G., & Fiorillo, A. (2022). The impact of Covid-19 on unemployment across Italy: Consequences for those affected by psychiatric conditions. *Journal of Affective Disorders*, 296, 59-66. <https://doi.org/10.1016/j.jad.2021.09.035>
- Poole, M. K., Fleischhacker, S. E., & Bleich, S. N. (2021). Addressing child hunger when school is closed—considerations during the pandemic and beyond. *New England Journal of Medicine*. 384(10), e35. [10.1056/NEJMp2033629](https://doi.org/10.1056/NEJMp2033629)
- Purwanto, M. R., Mukharrom, T., Syibly, M. R., & Nurozi, A. (2021). Polygamy in Muslim Countries: A Comparative Study in Tunisia, Saudi Arabia, and Indonesia. In 2nd Southeast Asian Academic Forum on Sustainable Development (SEA-AFSID 2018) (pp. 435-437). Atlantis Press. <https://dx.doi.org/10.2991/aebmr.k.210305.082>
- Raifman, J., Bor, J., & Venkataramani, A. (2020). Seguro-desemprego e insegurança alimentar entre pessoas que perderam o emprego na sequência do COVID-19. *MedRxiv*. <https://doi.org/10.1101/2020.07.28.20163618>
- Santos, L. P. D., Lindemann, I. L., Motta, J. V. D. S., Mintem, G., Bender, E., & Gigante, D. P. (2014). Proposal of a short-form version of the Brazilian Food Insecurity Scale. *Revista de Saúde Pública*, 48, 783-789. <https://doi.org/10.1590/S0034-8910.2014048005195>
- Shafer, K., Scheibling, C., & Milkie, M. A. (2020). The division of domestic labor before and during the COVID-19 pandemic in Canada: Stagnation versus shifts in fathers' contributions. *Canadian Review of Sociology/Revue canadienne de sociologie*, 57(4), 523-549. <https://doi.org/10.1111/cars.12315>
- Silva Menegotte, P. C. da, Frömming, C. G., Ripke, M. O., Teo, C. R. P. A., da Silva Corralo, V., & Lutinski, J. A. (2021). Alimentação e saúde mental durante a pandemia de Covid-19. *Research, Society and Development*, 10(14), e82101421695-e82101421695. <http://dx.doi.org/10.33448/rsd-v10i14.216951>
- Silva, A. G. C. L. da., de Oliveira, T. M., Cáceres, A. E. M., da Silva Ribeiro, K. D., Lima, S. C. V. C., & de Oliveira Lyra, C. (2021). Impacto da COVID-19 na Segurança Alimentar e Nutricional: desafios e estratégias emergentes. *Research, Society and Development*, 10(13), e74101320894-e74101320894. <http://dx.doi.org/10.33448/rsd-v10i13.208941>
- USDA ERS - Key statistics & graphics. <https://www.ers.usda.gov/topics/food-nutrition-assistance/food-security-in-the-us/key-statistics-graphics.aspx>. Acesso o1/07/2022.
- Vasconcellos, A. B. P. D. A., & Moura, L. B. A. D. (2018). Segurança alimentar e nutricional: uma análise da situação da descentralização de sua política pública nacional. *Cadernos de Saúde Pública*, 34. <https://doi.org/10.1590/0102-311X00206816>
- Wolfson, J. A., & Leung, C. W. (2020). Food insecurity and COVID-19: disparities in early effects for US adults. *Nutrients*, 12(6), 1648. <https://doi.org/10.3390/nu12061648>
- World Food Programme (2020). WFP Global Update on COVID-19: November 2020. Rome, Italy; 2020. <https://docs.wfp.org/api/documents/8162681183bd492ab8e1cfc66435c956/download/>.