

Poultry Production in Developing Countries under COVID-19 Crisis

Subjects: **Agriculture, Dairy & Animal Science**

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Poultry farming is a significant source of revenue generation for small farmers in developing countries. It plays a vital role in fulfilling the daily protein requirements of humans through meat and eggs consumption. The recently emerged pandemic Coronavirus Disease-19 (COVID-19) impacts the poultry production sector. Although the whole world is affected, these impacts may be more severe in developing countries due to their dependency on exporting necessary supplies such as feed, vaccines, drugs, and utensils.

COVID-19

smallholder poultry

developing countries

1. Impacts of COVID-19 on Food Security and Poultry Production

The COVID-19 pandemic, unlike previous pandemics such as SARA-CoV and Ebola, severely impacted the food supply chain indirectly through disruptions of the downstream stages such as transport and logistics ^{[1][2][3][4][5]}. It affected all dimensions of food security, including availability, access, utilization, stability, and sustainability, depending on the industry, the locality, and the financial status of the affected region ^{[6][7]}. **Figure 1** illustrates the impacts of the COVID-19 pandemic on poultry production.

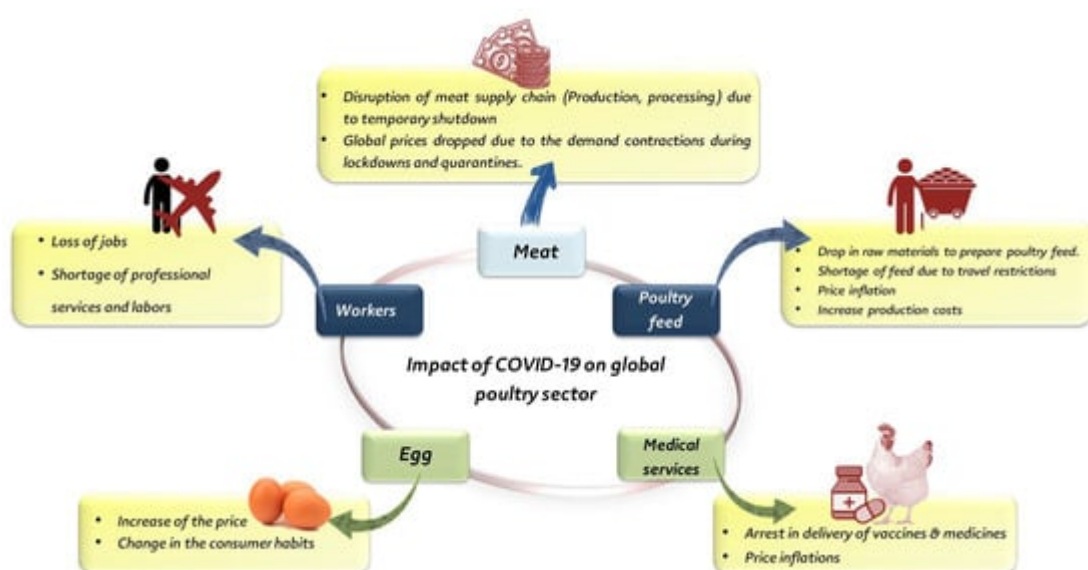


Figure 1. Impact of the COVID-19 pandemic on the global poultry sector.

Table 1 summarizes the negative impacts of SARS-CoV-2 on poultry production observed in some developing countries.

Table 1. Impacts of COVID-19 on poultry production in some developing countries.

Name of Country	Adverse Effects on Poultry Production	References
Bangladesh	<ul style="list-style-type: none"> • Disruption of necessary supplies such as feed, vaccines, medicines, and equipment • People are unwilling to consume chicken and poultry products due to rumors that SARS-CoV-2 is transmitted through poultry and poultry products • Discrepancy between supply and demand • The poultry sector lost \$825 million due to this pandemic • The poultry feed segment alone lost \$98 million from January to May 2021 	[8]
Egypt	<ul style="list-style-type: none"> • Negatively impacted many phases of the poultry logistic system, including production, transport, processing, marketing, retailing, and consumption • Farm profit fell by 20% in the first half of 2020, compared with 2019 • Disruption of the production inputs (e.g., breeds, feeds, drugs, and vaccines) 	[9][10][11]
India	<ul style="list-style-type: none"> • Dramatic negative impacts on the poultry industry • Projected losses were estimated to be \$3053 million • The economic impact is not consistent across the country due to geographical variations in consumption patterns 	[12]
Indonesia	<ul style="list-style-type: none"> • Disruption of the supply chain system • The market price of chicken dropped dramatically • Economic growth fell from 4.97% to 2.97% 	[13][14]

Name of Country	Adverse Effects on Poultry Production	References
	<ul style="list-style-type: none">• A significant drop in demand for broiler chickens	
Ghana	<ul style="list-style-type: none">• Decrease in the importation of animals and livestock products• Reduction in the availability of feed resources and farm inputs for animal production, leading to increase of price• Animal production activities, including feeding, management, and disease control adversely affected as a result of the lockdown	[15]
Myanmar	<ul style="list-style-type: none">• Negative impacts on chicken and egg industries• A decrease in demand in 60% broiler farms 40% of layer farms• Approximately 30% of broiler farms and 10% of layer farms have closed• 42% of long-term farm workers have been laid off• Reduction of broiler and egg prices	[16][17]
Nigeria	<ul style="list-style-type: none">• A substantial drop in sales and market price of eggs (dropped approximately 20%)	[18]
Saudi Arabia	<ul style="list-style-type: none">• The COVID-19 pandemic affected poultry consumption, transportation, and poultry business	[19]

ence of COVID-19 on the poultry production and environment. Environ. Sci. Pollut. Res. 2021, 28, 44833–44844.

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2. Plausible Explanations of COVID-19's Damaging Effects on Animal Production

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2.1. Concern about the Spread of SARS-CoV-2 from Animals and Social Rumors

At the beginning of this pandemic, the unknown nature of COVID-19 transmission was a major concern, particularly how it spread from animals to humans and vice versa [20][21]. However, poultry are not susceptible to SARS-CoV-2, although they are susceptible to other CoVs such as infectious bronchitis (IBV) that causes respiratory, intestinal, and reproductive diseases in poultry. Hussain, S.; Hussain, A.; Ho, S.; Sparagano, O.A.E.H.; Zia, U. U. P. Economic and Social Impacts of COVID-19 on Animal Welfare and Dairy Husbandry in Central Punjab, Pakistan. Front. Vet. Sci.

and *Ornithogallus* spp. in chickens [22][23]. IBV has also been reported in pheasants and peafowl [24]. The turkey coronavirus (TCoV) also causes enteric lesions [25][26] and might be involved in the poult enteritis and mortality syndrome (PEMS) [26]. There were also social rumors in some developing countries such as Bangladesh that SARS-CoV-2 can be transmitted via eggs and chickens, leading to price fluctuations for poultry meat and eggs and reducing consumption [21]. It has also been proposed that SARS-CoV-2 can spread through processed foods because it can survive for hours to several days on inanimate surfaces [27]; however, there is no evidence that the virus can be transmitted directly through food, milk, milk products, or eggs [28].

7. HLPE. Impacts of COVID-19 on Food Security and Nutrition: Developing Effective Policy

2.2. Lockdown and Restrictions of Trades

Responses to Address the Hunger and Malnutrition Pandemic. 2020. Available online:

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The lockdown of the food distributors, such as food courts, adversely influenced the retail demand. The transport and retail networks, in addition, the J. Prada, M.S. Livestock and Poultry Rearing by Smallholder Farmers in Haon Area and Bangladesh Impact of Food Security and Poverty Alleviation. Bangladesh J. Agric. Econ. 2020, 41, 73–86.

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(i) The animal feed supply was disrupted as due to lockdown, several countries such as Argentina and Brazil had to reduce their exports of raw materials of feed such as soybean and corn, which led to a shortage of dry feed in several developing countries [4][5][34]. In several African countries, the cost of chicken feed has increased [32].

20. Hassan, M. Socioeconomic State of Sample Layer Farmers in Bangladesh: An Investigation

(ii) Based on Dhaka and Kishoreganj Districts. *J. Appl. Bus. Econ.* 2020, 22, 101–119. Poultry services were reduced such as equipment, day-old chicks for stock replacement, feed, vaccines, drugs, diagnostics, and feed additives (vitamins and minerals) [5]. Exporters in several countries also faced a

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Challenges and impact of COVID-19 on sustainability. *Ger. J. Vet. Res.* 2021, 1, 19–27.

(iii) Market closures and transportation restrictions hampered access to markets and customers, affecting both animals and animal products, such as eggs and meat.

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(iv) The shortage of laborers severely impacted the poultry industry in developing countries, since poultry farmers rely on human resources rather than machines [8][9][10].

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2.3 Small-Scale Poultry Farms

Several small-scale poultry farms are widely distributed in developing countries. The general problems for small-scale poultry farming in developing countries are summarized in Figure 3.

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The severe negative impact on small-scale production in developing countries can be attributed to the following factors [4]:

31. Seleiman, M.F.; Selim, S.; Alhammad, B.A.; Alharbi, B.M.; Juliatti, F.C. Will novel coronavirus (COVID-19) pandemic impact agriculture, food security and animal sectors? *Biosci. J.* 2020, 36, 1315–1326.

(i) Lockdown harmed small-scale production severely because small-scale producers in developing countries rely more on labor than machinery.



Figure 3. Problems of Small-scale poultry farming in developing countries [24].

32. Elbey, G.; Dominguez, J. P.; Adenaut, M.; Gravenese, C. Impacts of the COVID-19 Pandemic on the Global Agricultural Markets. *Environ. Resour. Econ.* 2020, 76, 1067–1079.
33. Bamidele, O.; Amole, T.A. Impact of COVID-19 on Smallholder Poultry Farmers in Nigeria. *Sustainability* 2021, 13, 11475.
34. Abu Hatab, A.; Lagerkvist, C.; Esmat, A. Risk perception and determinants in small- and medium-sized agricultural enterprises amidst the COVID-19 pandemic: Evidence from Egypt. *Agric. Business* 2021, 37, 1–22.
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3. Prospective to Improve Poultry Husbandry under COVID-19 Pandemic

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According to the Centers for Disease Control and Prevention (CDC), 4913 cases with 20 deaths have been reported in different meat and poultry processing units [49]. It is recommended that all employees and supervisors should get regular training on infection control, workplace safety, and health tailored to their reading levels and chosen languages. The training should cover the following points: what employees should do if they feel sick

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Meat and Poultry Facilities: A Rapid Review and Lay Media Analysis. 2020. Available online: <https://www.cebm.net/covid-19/what-explains-the-high-rate-of-sars-cov-2-transmission-in-meat-and-poultry-facilities-2/> (accessed on 15 February 2022).

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and water for both hands for at least 20 s; (2) clearly labeling and sanitizing surfaces regularly; (3) thoroughly cooking the meat; (4) minimizing the risk of cross-contamination between cooked and raw foods.