

EFFECTS OF COVID-19 ON ENVIRONMENTAL CONDITIONS AND POULTRY PRODUCTION

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ABSTRACT

Although hens are not vulnerable to SARS-CoV-2, there have been a number of coronavirus illness outbreaks reported in connection with poultry processing plants in various nations. The COVID-19 pandemic and the created strain triggered the second, third, and most current waves of epidemics, which had unforeseen effects such being obliged to reduce demand for certain sectors, transit systems, jobs, and enterprises owing to public confinement. Additionally, because of the close closeness on the line, the cold, and the humidity, the circumstances in chicken processing factories increase the dangers. Due to poor pay and lack of access to paid sick days or proper healthcare, the majority of employees have little money saved up in case they choose to quit their stable jobs. Additionally, employees at meat and poultry slaughterhouses may get an infection via touching filthy workstations, dining room tables, or equipment, as well as from respiratory droplets in the air. Due to consumer behaviour changes brought on by the lockout, egg costs have climbed significantly. Over the next months, the COVID epidemic may have a significant influence on the world poultry trade as well. The impact of COVID-19 on chicken production, environmental sustainability, and earth systems will be the main emphasis of this study from many process angles.

INTRODUCTION

First case of Covid-19 was observed in Wuhan (Muthanna & Samad 2022; Al-Awkally et al. 2022; Ibrahim et al. 2022; Arif et al. 2022a, Arif et al. 2022b). Many disorders, including the Middle East respiratory syndrome (MERS) (WHO 2019) and severe acute respiratory syndrome (SARS) (Law et al. 2020) in humans, have been linked to coronavirus infections. The recent COVID-19 pandemic was caused by a novel coronavirus (SARS-CoV-2 or COVID-19), and other strains have since evolved and spread across the European Union (EU), leading to the 2nd shutdown (Alagawany et al. 2021; Saghir et al. 2021). A systemic illness brought on by COVID-19 infection is transmitted by the air, drops, or aerosol. Globally, COVID-19 has had an indirect impact on social and economic situations, animal production, the environment, and earth systems (Sharun et al. 2021). There have been speculations concerning the likely involvement of eggs and chicken meat in COVID-19, which caused a sharp decline in demand for poultry products starting in February 2020, just before the lockout was declared, and leading to the worsening of poultry economics owing to working capital depreciation. All facets of chicken processing were significantly affected, far more so than during the Avian Influenza outbreak of 2006, from small farmers to huge integrators (Das and Samanta 2021).

LITERATURE REVIEW

COVID-19

The subfamilies Torovirinae and Coronavirinae make up the family Coronaviridae. Alphacoronavirus and Betacoronavirus mostly infect mammals, Gammacoronavirus primarily infects avian species, and Deltacoronavirus primarily infects both mammalian and avian species (Phan et al. 2018; Attia et al. 2021). Torovirus, which originated in mammals, and Bafinivirus, which was recovered from fish, are the two genera that make up the family Torovirinae (Tokarz et al. 2015) COVID-19, SARS CoV, and MERS-CoV are all members of the Betacoronavirus genus (Shereen et al. 2020). The encapsulated COVID-19 virus is extremely contagious despite being readily eliminated by soap and other household cleaners.

Fever, a dry cough, and exhaustion are the most typical symptoms of the systemic illness brought on by COVID-19 infection; in rare instances, vomiting and diarrhoea may also be seen. Despite the fact that SARS-CoV-2 is not contagious in hens (Schlottau et al. 2020), various outbreaks of coronavirus diseases have been reported in

connection with poultry processing plants in nations such as Brazil, Canada, and Spain (Durand Moreau et al. 2020). According to studies, there is a great possibility for a community to expand around livestock plants (Middleton et al. 2020; Taylor et al. 2020). Work-related exposure to respiratory viruses makes plants vulnerable to regional respiratory virus epidemics. Long work shifts spent next to colleagues, physical demands that make it difficult to maintain correct facial protection, and shared transportation among employees (Taylor et al. 2020). At addition, the virus flourishes in extremely high or very low relative humidity and lower temperatures, and metallic surfaces keep live viruses longer than other conditions (Middleton et al. 2020). As we know there is no treatment for viral diseases (Samad, Hamza, Muazzam, Ahmer, Tariq, Javaid, et al., 2022; Samad, Hamza, Muazzam, Ahmer, Tariq, Javaid, et al., 2022; Samad et al., 2021; Samad, Hamza, Muazzam, Ahmad, Ahmer, Tariq, et al., 2022a, 2022b; F. M. S. Muthanna & Samad, 2022, Ibrahim et al., 2022; Mohammed et al., 2022) while bacterial disease also have treatment. (Mohammed et al., 2022b; F. M. Muthanna et al., 2022) and antibiotics also not effective for viral diseases because antibiotics only work on bacterial diseases (Samad et al. 2022; Ibrahim et al. 2022). Disease can cause stress (Muthanna et al. 2022).

METHOD

The COVID-19 pandemic's effects on the environment

The COVID-19 pandemic's consequences on the environment haven't gotten much notice. Nevertheless, this increased interest after the 2nd and 3rd waves of COVID-19 outbreaks, as well as the most recent epidemic in India (WHO 2020b): There hasn't yet been a discussion on COVID-19's effects, both good and bad, on the ecosystem as a whole, ecological sustainability, and earth systems. Due to the forced decreases in demand for industries, transportation networks, and all enterprises brought on by public isolation, this epidemic has had unintended implications that have decreased carbon emissions. For instance, air pollution in New York has decreased by roughly 50%. Emissions in China have decreased by 25%, while in Europe, emissions of nitrogen dioxide decreased in Italy, Spain, and the UK (Ficetola and Rubolini 2020). Other beneficial factors include clean sky, untamed animals roaming the streets, crystal-clear water in Venice, Italy, and a decrease in pollution elsewhere, especially in industrial districts (Capovilla 2020; Corrigan 2020; Ruiz 2020). One of the additional impacts of the COVID-19 epidemic has been a global fall in the use of coal and oil, a phenomena that has helped to significantly reduce air pollution (IEA 2020; Saadat et al. 2020). Even while this decrease is crucial for the overall health of the ecosystem, it also helps those who get COVID-19. Indeed, COVID-19 death rates have been noticeably higher in locations with increased air pollution (BBC News 2020).

RESULT

The COVID-19 pandemic's effects on the poultry industry

The COVID-19 pandemic has had an impact on poultry breeders, however the effects vary greatly from region to region. In fact, the way the illness spreads varies per nation. In a research conducted in England and Spain (Clements 2020a), manufacturers reported that product demand had recently increased, with 17.4% of them saying that the growth had been noticeable. However, this scenario is not uniform as 37% of respondents said that requests had decreased, with 28% saying that the decrease had been significant. Additionally, there has been a rise in the acceptability of online employment in lieu of live production; according to 17% of respondents, farms have employed fewer workers. More than 14% of those polled said the epidemic had revived plans to convert to completely automated slaughterhouses. The COVID-19 pandemic's problems, according to 8% of respondents, have prompted them to accelerate their plans for automation (Clements 2020b).

The avian infectious bronchitis virus (IBV), which belongs to the genus *Gammacoronavirus* and cannot be transmitted to humans, has been heavily restricted in poultry. SARS-CoV does not infect or afflict poultry since COVID-19 and SARS-CoV belong to the same family and have the same ACE2 host cell receptor. According to this result, it is doubtful that chicken would act as a reservoir for SARS coronaviruses (Hafez 2010).

Eggs and meat

Despite the COVID-19 outbreak, slaughterhouse employees had to continue working. As a result, their work environments in the slaughterhouses and zones, where they are required to stay close to colleagues and directors, may significantly raise their potential risk of COVID-19 exposure. Additionally, employees at beef and poultry slaughterhouses run the risk of contracting an infection through respiratory droplets in the air or by touching filthy workstations, dining room tables, or equipment (CDC 2019). The price of food has remained steady worldwide despite the COVID-19 epidemic. The Center for Strategic International Studies (CSIS 2020; Galimberti 2020) claims that owing to the demand for contractions during lockdowns and quarantines, worldwide prices barely decreased by 4.3% from February to March 2020. (Welshans 2020). Because of confinement, there is a greater demand for chicken meat and eggs at the retail level. During the panic purchasing period that occurred in the first few weeks of the crisis, the retail market for chicken meat increased by about 75%; however, this demand has since reverted to normal levels. In England, the demand for eggs has surged by 20–35%. (NFU 2020).

Hatcheries

The pandemic has had a significant negative effect on chicken hatcheries as well. The demand for eggs to be utilised for incubation has dropped as a result of the lockdown and the ensuing restriction on the global poultry market. To preserve their own market, several countries have outlawed the import of poultry meat, which has resulted in a 15–25% decline in chicken orders overall (De Lange 2020). Several hatcheries in Italy have been obliged to put birds to sleep before reducing the quantity of eggs being incubated (Tuttoggi 2020). If eggs are frequently delivered to a hatchery, keeping them in storage for a longer period of time at low temperatures may help lower the number of incubated eggs. This strategy, however, has the potential to diminish hatchability and chick quality over time. Therefore, fewer eggs entering the hatchery may be preferable. This may be accomplished by culturing older flocks and forcing new flocks to moult (De Lange 2020). However, this strategy lowers the price of 1-day-old chickens: in Italy, the cost has decreased by 35%.

DISCUSSION

Food and nutrient security

The COVID-19 pandemic has significantly decreased the supply of raw materials needed to manufacture chicken feed in practically all nations, however the causes for this are diverse. Corn and soybeans are the primary constituents in chicken diets. The USA, China, Brazil, and Argentina are the world's top corn producers. The same nations also produce the most soy, but in a different order: the USA, Brazil, Argentina, and China. As a result, finding the raw materials needed to make chicken feeds has been very difficult for many nations throughout the globe that rely on imports. Additionally, the feed sector uses around 65% of the net yearly output of wheat, maize, and soybeans to feed farm animals, while the remaining 35% is utilised to fulfil human requirements (All About Feed 2020a, 2020b). Therefore, despite a rise in grain consumption for human use, it has not been able to make up for the losses associated with a decrease in the production of animal feed (All About Feed 2020b; Berkhout 2020). Additionally, certain operations in the agriculture sector include migrant labourers who are stranded in their home countries as a result of lockdowns. Consequently, a significant amount of the workers in the feed industry has been lost (All About Feed 2020a). These elements have had a considerable influence on the poultry industry worldwide (The Poultry Site 2020; Poudel et al. 2020).

CONCLUSION

International poultry commerce Over the next months, the COVID epidemic may have a significant influence on this industry as well. As an example, the EU imports over 850,000 tonnes of chicken meat annually from developing nations, primarily Brazil, Thailand, and Ukraine. The foodservice industry is the primary target market for such imports. Even though the EU market is not currently in need of chicken meat, many nations nonetheless export it in order to maintain their rights under the EU Tariff Rate Quota system. Since the HORECA (hotel, restaurant, café) chains reopen, the meat is kept in storage. In the next weeks and months, there will be a huge excess of chicken meat on the market in the EU as a result of this move, which will have serious repercussions on the cost and quality of the goods as well as on future commerce. Additionally, avian influenza outbreaks in Eastern Europe continue to severely affect several nations (Poland, Hungary, and Romania). Due to this problem, export markets in developing nations have closed, which has caused this meat to return to the EU market and exacerbated the situation (AVEC 2020; Parrish et al. 2008).

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