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Corona and food security in poor countries

AUTHOR

Magnus Hatlebakk
Chr. Michelsen Institute

This report discusses the need for measures to protect food security in the context of the corona outbreak. The report is based on general insights into factors that determine food security,¹ and specific insights from the Ebola outbreaks in Africa, with the main studies being from the 2014 outbreak in Guinea, Liberia and Sierra-Leone. Since Corona is more infectious, but with a much lower risk of serious complications and death, the evidence from Ebola has to be interpreted based on available insights from the Corona outbreak, including the interventions to slow it down.

KEY MESSAGES

- Ebola increased food insecurity, but not substantially so
- Food insecurity happened as easily in rural as in urban areas
- Corona may negatively affect access to non-family farm labor, and trade in food
- Food stocks in terms of live animals and robust staple foods that can be harvested year round may constitute a reserve in times of crisis
- Governments should monitor food production with help of local extension services
- Food aid and cash transfers may be necessary where interventions against corona lead to lack of incomes and lockdowns of local food markets

Studies of food security under Ebola are scarce, and tend to rely on telephone surveys during the epidemic. When people get a telephone call asking whether they have sufficient food during a crisis, they may over-report problems.² We will thus supplement the literature with aggregate data on production and import of staple foods. There are also a few papers that rely on broad ongoing surveys that were implemented for other purposes. Normally these will give smaller biases.

The World Bank (WB) has one summary report [2,3] that relies on the World Food Programs (WFP) telephone surveys in all three countries, as well as the WB's own surveys in Liberia and Sierra Leone. The WFP reports use standard food security measures, which rely on a series of questions on access to food. The WB reports focus on the production side, but are also based on telephone interviews. We will refer to the underlying country reports below.

Food security

There are four necessary requirements for food security, as defined by the FAO [4]: 1) Food has to be *available* on the supply side. 2) Consumers must be able to *access* the food from the demand side, that is, they must have the necessary income to be able to buy food at the going prices. 3) People must be able to *utilize* the food, that is, the body must be healthy and able to make use of the nutrients in the food. 4) Availability, access and utilization must be *stable* over time. A pandemic, such as corona, may threaten all four elements of food security.

Availability

The availability of food depends on local production,

including your own production, and trade. Corona may affect both. If people are ill they may not be able to put in the necessary labor inputs at the critical junctures of production, such as land preparation and planting. A recent study [5] of the Ebola epidemic in Liberia used available household survey data, a Household Income and Expenditure Survey (HIES), and found that Ebola disrupted group labor mobilization and thus reduced the area planted with rice, the main staple crop in Liberia. The best estimate from the study indicates that this reduction in labor inputs may explain half of the 12% reduction in rice production estimated by the FAO [6].³ This finding corresponds with the WB telephone survey on Liberia where 65% said their harvests were smaller, while 28% said they were higher [7]. In Sierra-Leone the parallel WB survey found that the planting was already completed when Ebola hit, and there was no major disruption [8]. Aggregate data indicate, however, that there may have been a drop in 2015.⁵ There is thus some evidence of a reduction in staple food production during the Ebola epidemic.

If we go beyond these studies of the Ebola outbreak, and apply our own knowledge of farm production and labor markets in poor regions of the world, we find it likely that an epidemic may affect people's willingness to work on other people's land, in particular if it requires travel, or large groups of labor as is needed during transplanting of paddy and during harvest of many staple crops. Farms that rely only on family labor are less likely to be affected. Thus the timing of the epidemic in relation to the agricultural seasons is essential. In Sub-Saharan Africa, the maize harvest may in principle suffer now in regions with an early rainy season. It appears,

however, that corona has not yet reached rural areas at a rate that will limit the maize harvest. In other regions maize, millet and rice planting will take place early summer and harvest later this year, and may potentially be harder hit if corona spreads in rural areas.

If production gets a hit in some areas, there will be a need to buy food elsewhere. Corona may directly affect trade as transport workers are more exposed than others to transmission of the disease as they travel between regions. Transport and sales of food are, however, more likely to be hit by the *interventions* against corona as local and wholesale markets may close down to avoid transmission of the disease. Returning to the Ebola evidence, aggregate import data show that rice imports declined in Liberia and Sierra Leone in 2016, while there is no clear trend for Guinea. This drop came after the peak of the epidemic, and may not be related. In fact, an FAO report on trade routes for staple food in the three countries during the Ebola epidemic concluded that rice imports were not significantly affected [9]. The study found that domestic trade routes were affected, but without major effects on food prices. The study explains this by a similar drop in demand due to lower incomes during the epidemic. In line with this conclusion, they find a shift away from rice to local staples such as tubers. In particular it was found that cassava was very robust to the epidemic as it is less labor intensive, is harvested throughout the year, is grown everywhere and is less perishable. It appears that local trade functioned for these products as also urban markets were covered. For a summary of the findings in the FAO report see our Figure 1 (which is a reproduction of Table 9 in the FAO report).

Main findings on availability: Production tasks that rely on hired or group labor may be hit by an epidemic, as may wholesale trade. Production that depends on family labor, and trade in local staples such as cassava, is much less likely to suffer. Urban areas are, however, potentially at risk. Relevant government interventions will thus be:

Recommendations on availability:

A1. Agricultural extension workers will have to be vigilant and register any need for labor in regions hard hit by the pandemic.

A2. In case of local lack of labor, the government should organize safe transport for seasonal agricultural workers, to avoid transmission of the disease on packed buses and trains.⁶

A3. Government and aid agencies should establish food distribution systems in areas where markets are locked down.

Access

If availability of food declines locally one may expect food prices to increase. On top of this, and potentially more important, the *interventions* against corona are likely to lead to a decline in income due to lock down of businesses. As staple food is a necessity one shall expect households to rather reduce their other consumption, including consumption of higher value food items such as vegetables, fish and meat, if prices increase and incomes decline. This implies that the availability discussion above is the essential one when it comes to access to staple foods. A decline in consumption of other types of food will of course be a problem.

The mentioned WFP food security surveys cover the full chain from availability to access. The reported findings at the end of 2014 indicate (despite the title of the report) that Ebola had no major impact on food security [10]. By the end of October, 200 000 out of 1.7 million food insecure people suffered because of Ebola according to the WFP estimates [11]. In some production areas prices declined because there was a surplus due to trade restrictions. Local food insecurity was found in rural areas, and less so in urban areas, presumably because incomes are higher there. Towards the end of the epidemic, when WFP had done several rounds of phone surveys, a gradual improvement is reported, but the dominating picture is the stability in all measures, including food prices [12].

Going beyond Ebola, we know in general from studies of related food crisis that access may be as important as availability. This is particularly so in countries without democratic institutions.⁷ We have already discussed how direct food aid may supplement local supply in areas particularly hit by lockdowns. During the corona epidemic, this may be of particular importance in urban slums and refugee camps where the lock-down could lead to a lack of income, and potentially lack of deliveries to the local markets. In support of the local markets, a temporary income support (cash transfer) may help with access to food, as demand may create its own supply. Thus, adding to the recommendations on availability:

Recommendation on access:

B1. Governments and aid agencies should consider cash transfers as a supplement to direct food aid to help support local food markets and production.

Utilization

The body is not able to fully utilize nutrition in case of illness.⁸ This will vary with the type of illness. For many people, corona will simply result in symptoms of the common cold, which, from what we understand, will

Figure 1 Source: from the report 'Impact of the Ebola virus disease outbreak on market chains and trade of agriculture products in West Africa', FAO, Dakar 2016, p. 23.

Impact on market chain	Rice	Potatoes (horticultural products)	Cassava	Palm oil	Domestic animal products	Cocoa	Bushmeat
Production	Low (at national level, medium in areas strongly affected)	Low High post-harvest losses	Low	Low	Low feed access transhumance	Low High post-harvest losses	High (commercial hunting)
Trade	High (for local rice, low for imported rice)	High (interrupted exports)	Low	Medium (regional, international trade)	Medium (cattle) to high (poultry, pork) impact on regional trade	High (interrupted trade)	Very high
Prices	Low (increase/decrease)	High decrease (financial losses for producers)	Low	Low (producers prices and consumers prices in main cities)	High on feed prices	High decrease	No data
Consumption	Medium (substitution due to lower purchasing power)	No impact	Low (substitute of rice)	No impact	Medium (loss of purchasing power)	N/A	High (urban area)

Table 9. Summary of impacts on selected market chains

have minor, if any, implications beyond the symptoms themselves. Diarrhea, which would have a direct impact on uptake of nutrients from food, has been mentioned as a symptom, but for very few people according to WHO [19]. In the serious cases people have breathing problems and need oxygen and intensive care. In poor settings, such as urban slums or refugee camps, nutritional intake may be an additional problem, but the core problems of lack of oxygen in the severe cases are likely to dominate. Thus for food security availability and access will be the main concern rather than utilization of nutrients.

Stability

The fourth condition for food security is that food is available and accessible not only today, but is expected to be accessible over time. This is clearly relevant for the corona pandemic. Corona outbreaks may come in waves depending on how strict countermeasures are implemented, and potentially also depending on the natural environment, with temperature and humidity potentially affecting the spread.⁹ Beyond the measures discussed above regarding availability and access, the potential for a worsening situation in the future call for measures to prepare for a potential food crisis. This means to stock up on food and inputs to food production. Food storage is one solution, but food can quickly deteriorate in hot and humid climates. A supplement will be to build up reserves of stocks of live food, in terms of sustainable fish resources, including fish farming, livestock, and staple food that can be harvested throughout the year such as cassava.¹⁰ Local governments can also secure land for production of staple food, and stock up on other inputs such as fertilizers.

The timing of harvest and out-take of livestock and fish-stocks is also an issue in the face of a potential food crisis. Under normal circumstances one shall expect farmers to make the correct timing decisions, as they have an incentive to wait for better prices. Corona may affect these expectations, and individual incentives may not correspond to what is best for the community, and thus require government incentives to wait with delivery. And there may be a need for local communities to stock up on food both in storage and on the field. This will, however, require a safe environment. In conflict-ridden regions the best storage may be in other assets that can be more easily hidden and sold in times of need. This leads to the following recommendations.

Recommendation on stability:

C1. Governments should stock up on local staple food and agricultural inputs.

C2. Governments should support farmers through in

particular extension services in preparing land and other inputs for increased staple food production

C3. Farmers should get incentives to wait with harvest of staple foods that may last longer in the field than in storage

C4. Livestock (and fish farm) owners should get incentives to wait with out-take.

Notes

¹ For general insights see an earlier report by us for the Ministry of Foreign Affairs [1].

² Food security measures normally consist of a battery of questions on number of meals per day, type of food, and whether people go hungry.

³ The FAO estimate is based on an agricultural sector simulation model complemented with rapid assessment field data. The 12% reduction due to Ebola corresponds with aggregate production data, which shows that the 2014 production of paddy in Liberia was 17% below 2015 and 12% below 2013 (calculated by us based on data downloaded from FAO-stats).

⁴ For Sierra-Leone the FAO estimate showed a 8% decline due to Ebola, while it was 4% for Guinea. For the aggregate data there is a discrepancy in the production figures between different agencies for 2014, possibly indicating measurement problems during Ebola, but for 2015 there is a clear drop in the range of 30% (IRRI-stats on both FAO and USDA data: www.irri.org/resources-and-tools/online-resources). For Guinea we do not find a drop in aggregate paddy production.

⁵ FAO-stats.

⁶ In South-Asia we have observed packed busses that bring migrant workers back to the villages. This may help with labor shortages in agriculture but increased the risk of transmission of corona.

⁷ The combination of supporting both local production and trade in times of food shortages has been a large topic in development economics with Amartya Sen's work on famines as an essential contribution [13,14]. He also argued that democracy and a free press are essential as an informed public that are free to protest will more easily raise their demand for well-functioning food markets and support programs. Martin Ravallion also has a good review of this early literature on famines [15].

⁸ On the relations between nutritional intake, health and economic outcomes see a good early review by Strauss and Thomas [16], as well as more recent discussions by Deaton [17,18].

⁹ It is too early to conclude on the role of temperature and humidity for the spread of the corona virus, for one discussion of the evidence see: www.bbc.com/future/article/20200323-coronavirus-will-hot-weather-kill-covid-19.

¹⁰ Cassava is in general important for food security in Africa [20].

References

1. Hatlebakk, M. (2018). Norwegian aid to food security, nutrition and agriculture. CMI Report 2018:01.
2. Thomas, M. R., Smith, G., Ferreira, F. H., Evans, D., Maliszewska, M., Cruz, M., Himelein, K. and Over, M. (2015). *The economic impact of ebola on sub-Saharan Africa: updated estimates for 2015*. World Bank.
3. Etang, A. and Himelein, K. (2020). "Monitoring the Ebola Crisis Using Mobile Phone Surveys", in: *Data Collection in Fragile States*. (pp. 15-31). Palgrave Macmillan, Cham.
4. FAO (2008). *An Introduction to the Basic Concepts of Food Security*. www.fao.org/3/a-a1936e.pdf
5. De La Fuente, A., Jacoby, H. G., & Lawin, K. G. (2019). *Impact of the West African Ebola Epidemic on Agricultural Production and Rural Welfare: Evidence from Liberia*. Policy Research Working Paper 8880. World Bank.
6. FAO. (2015). *FAO/WFP Crop and Food Crop Security Assessment – Liberia, Sierra Leone and Guinea*.
7. Himelein, K. and Kastelic, J. G. (2015). *The socio-economic impacts of Ebola in Liberia. Results from a High Frequency Cell Phone Survey. Round 5*. World Bank.
8. Himelein, K. and Kastelic, J. G. (2015). *The socio-economic impacts of Ebola in Sierra-Leone. Results from a High Frequency Cell Phone Survey. Round 3*. World Bank.
9. Alpha, A and Figuié, M. (2016). *Impact of the Ebola virus disease outbreak on market chains and trade of agricultural products in West Africa*. Report for FAO REOWA (Resilience, Emergencies and Rehabilitation in West Africa). FAO.
10. WFP (2014a). *Guinea, Liberia and Sierra Leone. Food insecurity remain high despite of the harvest*. Special mVAM Regional Bulletin #1: November 2014. VAM Food Security Analysis.
11. WFP (2014b). *How can we estimate the impact of Ebola on food security in Guinea, Liberia and Sierra Leone*. VAM Food Security Analysis.
12. WFP (2016). *MVAM food security and markets update: Guinea, Liberia and Sierra Leone*. VAM Regional Bulletin #15: February 2016. VAM Food Security Analysis.
13. Sen, A. (1981). *Poverty and Famines*. Oxford University Press.
14. Sen, A. (1999). *Development as Freedom*. Oxford University Press.
15. Ravallion, M. (1997). "Famines and Economics". *Journal of Economic Literature*. 35(3): 1205-1242.
16. Strauss, J. and Thomas, D. (1998). "Health, nutrition, and economic development". *Journal of Economic Literature*. 36(2): 766-817.
17. Deaton, A. (2003). Health, inequality, and economic development. *Journal of economic Literature*, 41(1), 113-158.
18. Deaton, A. (2013). *The great escape: health, wealth, and the origins of inequality*. Princeton University Press.
19. www.who.int/health-topics/coronavirus#tab=tab_3
20. Sarris, A. (Ed.). (2010). *Food security in Africa: Market and trade policy for staple foods in Eastern and Southern Africa*. FAO and Edward Elgar Publishing.