

IMMUNIZATION IN CONFLICT-AFFECTED AREA: THE CASE OF SIERRA LEONE AND NIGERIA

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DOI: 10.24193/subbeuropaea.2020.1.08

Published Online: 2020-06-30

Published Print: 2020-06-30

Abstract:

Conflict affects the institutions of health that help vaccination programs. This article addresses the complexity of immunization in the matrix of two African contexts: Sierra Leone and Nigeria. After introducing the subject, I will expose the factors that would explain the success or the failure of implementing vaccination measures. Then I will briefly synthesize the context of these two African countries by putting an emphasis on the vulnerability induced by the conflicts. Finally, I will make a case study of health challenges and responses in relation to the factors exposed in the first section of the article.

Keywords: Vaccination, Conflict, Sierra Leone, Nigeria, Health challenges.

1. Introduction: a political history of vaccination.

Immunization is the most cost-effective child health intervention¹. It was confronted with many challenges and political impediments. The history of vaccination was connected to the development of microbiology and immunology and also to populations' style of life. Since Pharaohs in Egypt, 1000 years before Christ; some observers noted the phenomenon of long-life protection to re-exposure². In the seventeenth century, several scientists worked on immunization issues; smallpox caused thousands of deaths and emerged in epidemic waves pushing people from different

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¹ UNICEF, Immunization program, [<https://www.unicef.org/immunization>], 29 June, 2020.

² *Ibidem*.

areas into trying to healthy immune people by exposing them to the virus³. In the eighteenth century, Edward Jenner tried to immunize some patient by cutting them and trying to infect them⁴. In 1857, Louis Pasteur created the first attenuated vaccine against cholera and named it “vaccine” in honoring Jenner. He explained the principle of vaccination as “weakened viruses with the particularity of never killing, of giving a mild illness that prevent from deadly disease.”⁵ In 1885, he created the first attenuated human vaccine against rabies and the Pasteur Institute⁶. A Prussian competitor of Louis Pasteur also played a great role in microbiology: Robert Koch. There was a serious rift between both microbiologists in a time of nationalism through Europe and in the post-Franco-Prussian War in 1870⁷. Their competition was sometimes unhealthy impeding scientific progress but their coworkers had more academic relationships⁸.

Since the emergence of epidemics and burden of infectious sicknesses, mortality due to avoidable diseases has decreased with the development of public health, sanitation, vaccines and international programs. In fact, vaccination campaigns organized by governments are political projects that aim national immunity⁹. It is during the after-War World and global depression periods that public health developed outside of Europe and North America in three large-scale processes “– the post-war reconstruction and Cold War ideological conflict, decolonization and the advent of the World Health Organization (WHO) – that rearranged the supply–demand relationship for vaccines between the West and the rest of the world.”¹⁰

This context brought vaccination into international political programs.

³ Vaccination-info.be, L’histoire de la vaccination, [<https://www.vaccination-info.be/histoire-de-la-vaccination/>], 29 June, 2020.

⁴ *Ibidem*.

⁵ *Ibidem*.

⁶ *Ibidem*.

⁷ Steven M. Opal, “A Brief History of Microbiology and Immunology” in *Vaccines: a Biography*, ed. Artenstein A., New York: Springer, 2010, pp. 31-56.

⁸ *Ibid*, p. 46.

⁹ Christine Holmberg, “The Politics of Vaccination: A Global History” in Stuart Blume and Paul Greenough (eds.), Issue 4, Volume 50, Manchester: Manchester University Press, 2017, pp. 741-743

¹⁰ *Ibidem*, p. 5.

Governments, through Ministries of Health, play a crucial role in developing policies, programs, campaigns regarding health. Depending on the budget to allow for this sector it can strengthen the infrastructure, the access, the education, the research and can favor vaccination. The government has a key role in “formulating policies, defining strategic vision clearly, and articulating the direction the leadership wishes to see the health system follow.”¹¹ But scholars have shown that the African systems are among “most bureaucratic and least effective managed institutions in the public sector”¹². The ministries are fragmented with vertical programs, or ritual chiefdoms, dependent on certain donor funding.”¹³ It seems that Africa lacks attention to the link between education and good health and that health is weakened at the village level and more sustained in a provincial one¹⁴. Another problem is the illusion given by national hospitals that rural areas are well served which is not the case¹⁵ and which is an impediment to the development of health infrastructure and to access.

Conflict-affected areas suffer from an absence or unstable governments, ongoing conflict, poor coordination, insecurity, poor access to health care, economic and environmental degradation, absence or collapse of public health infrastructure which makes them more vulnerable and would require a huge monetary investment. International Organization such as WHO, UNICEF, Gavi, work on strengthening health capabilities.

The WHO was created in 1948 as a specialized agency of health¹⁶. The role of the organization is even more important in conflict-affected areas where funding to health policies is very thin which led it to insure the Universal Health Coverage (UHC) in Africa: it is a program that would grant equal access to health care to all the population¹⁷. The WHO is an

¹¹ Mario J. Azevedo, *Historical Perspectives on the State of Health and Health Systems in Africa*, Jackson, USA, Springer, 2017, p. 10.

¹² *Ibidem*, p. 10

¹³ *Ibidem*.

¹⁴ *Ibidem*, p. 1.

¹⁵ *Ibidem*.

¹⁶ Kelley Lee, *Historical Dictionary of the World Health Organization*, Lanham, Md. ; London: Scarecrow, 1998, pp. 25-26.

¹⁷ WHO, Qu'est-ce que la couverture universelle en matière de santé, [https://www.who.int/features/qa/universal_health_coverage/fr/], 29 June, 2020.

apolitical international organization with little political leverage that has a global goal to achieve and relies on diplomatic relations. The main goal of the global organization "shall be the attainment by all people of the highest possible level of health."²¹ The WHO do so in keeping collaboration with the UN and acts "generally to take all necessary action to attain the objective of the Organization"²¹. In 1978, it took included socioeconomic factors¹⁸. The regional office of the WHO in Africa is the WHO African Region (WHO AFR).

The WHO recommends a set of routine immunization for children under five years old with the goal to face certain diseases that could be prevented. Main causes of morbidity and mortality is due to diarrheal disease (DD), respiratory infections and other illnesses that are avoidable.

Vaccination is the most cost-effective way to decrease avoidable diseases especially in conflict-affected areas. It is a tool of the health system that would require an existing infrastructure in order to be delivered, but it is also dependent on several other factors. Implementing maximum coverage would be a success in decreasing morbidity and mortality due to preventable sicknesses. One indicator of success is the rate of fully immunization of children since the implementation of the expanded Program on immunization (EPI). National Immunization Programs (NPI) which is interchangeable with EPI - established in 1974 by the WHO¹⁹ - are used to preventing vaccine-preventable diseases in children²⁰; they use routine and specialized vaccination campaigns for this purpose²¹. The EPI is targeting six killers: Tuberculosis, Diphtheria, Tetanus, Pertussis, Polio and Measles. Regarding the importance of vaccination, the major question is why the implementation of a maximum vaccination coverage can be a

¹⁸ Yves Beigbeder, "Les Partenariats De L'organisation Mondiale De La Santé," in *Études internationales*, no.2, Volume 41, 2010, pp. 233-251.

¹⁹ Davies Adeloje, "Coverage and determinants of childhood immunization in Nigeria: A systematic review and meta-analysis," in *Vaccine*, issue 22, Volume 35, 2017, pp. 2871-2881.

²⁰ WHO, *Module 5: Vaccine Safety institutions and mechanisms*, WHO [<https://vaccine-safety-training.org/national-immunization-programmes.html>], 29 June, 2020.

²¹ WHO, *Yemen, Update on the Expanded Programme on Immunization*, December 2019, [<https://reliefweb.int/report/yemen/update-expanded-programme-immunization-december-2019>], 29 June, 2020.

success or a failure? Why does vaccination work in some contexts and not in others according to EPI rates?

2. Factors that would explain success or failure in implementing vaccination measure.

Several scholars have been discussing what could cause the success or the failure of vaccination measures. Conflict increases risk factors as malnutrition, sanitation, hygiene, increase of vectors, overcrowding, displacements, IDPs, poor infrastructure that play a direct role in the delivery of health services and thus, vaccination.

2.1. Political factors.

Stein explains that eradication of diseases is due to political will and commitment. It is the case of the eradication of smallpox which was made possible by coordination among experts and the WHO in 1980 after almost two centuries of challenges²². On the other hand, Stein claims that initiative shouldn't be interrupted; stopping immunization even temporarily may cause setbacks and global emergencies²³ which highlight the global interest of vaccination. For him, delaying in reporting has public health consequences and diplomacy is an important key for global eradication²⁴.

Kamadjeu's links success of vaccination to collaboration which increases opportunities of reaching remote and marginalized communities²⁵. It is communication and dialog that improves collaboration between ministries, UN agencies, local partners and communities²⁶. All these factions play an important role in efficient vaccination.

Connolly explains that getting a higher level of coordination between governments and external actors as the UN agencies and NGOs would improve vaccination²⁷. Available interventions need to be more

²² R.A. Stein, "Political will and international collaborative frameworks in infectious diseases," in *International Journal of Clinical Practice*, no. 1, volume 69, 1, 2015, pp. 41-48.

²³ *Ibidem*, p. 41.

²⁴ *Ibidem*, p. 43.

²⁵ Raoul Kamadjeu, "Immunizing nomadic children and livestock Experience in North East Zone of Somalia," in *Human Vaccines and Immunotherapeutics*, 11, 2015, pp. 2637-2639.

²⁶ *Ibidem*, p. 2639.

²⁷ Máire A. Connolly, Gayer et. Al, "Communicable diseases in complex emergencies: impact and challenges," in *The Lancet*, Issue 9449, Volume 364, 2004, pp. 1974-1983.

systematically implemented and further research is needed to adapt and simplify intervention at a local level. It would help working on several challenges such as the need for shelter, water, food and sanitation.

Azavedo underlines the need for “an integrated approach to health, involving whole sectors of government, (...)”²⁸ Sanitation, state of water and hygiene in Africa is causing the failure of vaccination success by favoring spread of diseases. He also emphasis on corruption, lack of transparency Health Care (PHC) delivery, citizen participation in health care policies and lack of freedom as major impediments toward improved health care to citizens²⁹. Finally, people are more following medical theories and concepts from the colonial past, focusing more on the individual than on the community’s interest³⁰.

For Stein, the pattern of conflict is to be taken into consideration; there are three types of conflict: international conflict between states, internal conflict involving two main forces (government and rebels) and internal conflict between several factions in a country that hasn’t a recognized government. The latter is the one facing the most significant obstacles in delivering health care³¹.

2.2. Technological and practical factors.

Iwu emphasis the fact that the success of new vaccines would depend on other technological and practical factors such as the expansion of national schedules, upgrading the systems, process, infrastructure and technology. Together, they would be useful in targeting a larger population to reach people that haven’t access and to increase vigilance in management of vaccine stocks³². Gavi also stresses the importance of access

²⁸ Mario J. Azevedo, “Historical Perspectives on the State of Health and Health Systems,” *op. cit.*, p. 2.

²⁹ *Ibidem*, p. 10.

³⁰ *Ibidem*, p. 12.

³¹ R.A. Stein, “Political will and international collaborative frameworks in infectious diseases,” *op. cit.*, p. 46.

³² Chinwe Iwu et al., “A scoping review of interventions for vaccine stock management in primary health-care facilities,” in *Human Vaccines and Immunotherapeutics*, no. 11, Volume 15, 2019, pp. 2666-2672.

to new vaccines and the optimization of the cold chain³³. Vaccines should be maintained at low temperature following a 'cold chain' which is important for the success of vaccination³⁴; it "is a system of storing and transporting vaccines at recommended temperatures from the point of manufacture to the point of use"³⁵ which can be problematic in conflict settings due to the occurrence of shortages.

Another technical issue is the underuse of oral rehydration treatments, the use of inappropriate intravenous fluids, absence of regulatory controls, improper or incomplete use of drugs, delays, characterization of new pathogens and their widespread transmission before control measures can be implemented³⁶.

Schlipköter grant the success of vaccination to "a good understanding of the mechanisms of viral transmission and contagion."³⁷ Another factor is crucial: the public's compliance to control and preventive measures³⁸. These two elements should be present at the same time which is not always the case and is increased in middle- and low-income countries that are victims of political unrest, poverty, lack of adequate health and sanitation infrastructure³⁹.

Azavedo underlines the importance of hygienic practices that could eradicate most infectious diseases⁴⁰. Hygiene, sanitation and clean water, are primordial and taken into consideration by the Water, Sanitation and

³³ Gavi, *Santé : renforcer les chaînes d'approvisionnement pour mieux protéger les populations*, [<https://www.gavi.org/fr/sante-renforcer-les-chaines-d-approvisionnement-pour-mieux-protoger-les-populations>], 29 June, 2020.

³⁴ Chinwe Iwu et al., "A scoping review of interventions for vaccine stock management in primary health-care facilities," in *op. cit.*, p. 2666.

³⁵ WHO, EPI logistics, [https://www.who.int/countries/eth/areas/immunization/epi_logistics/en/index1.html], 29 June, 2020.

³⁶ Máire A. Connolly, Gayer et. al, "Communicable diseases in complex emergencies: impact and challenges," in *op. cit.*, p. 1980.

³⁷ Ursula Schlipköter and Antoine Flahault, "Communicable Diseases: Achievements and Challenges for Public Health," in *op. cit.*

³⁸ *Ibidem*, p. 106.

³⁹ *Ibidem*, p. 99.

⁴⁰ Mario J. Azevedo, "Historical Perspectives on the State of Health and Health Systems," in *op. cit.*, p. 54.

Hygiene (WASH) program⁴¹. WASH and food security are very important in order to improve the efficiency of vaccination by avoiding worsening spreads especially concerning diseases spread through fecal-oral routes, food and water as DD or Tetanus and Polio.

Other determinant factors that would guarantee the success of immunization should be taken into consideration such as; the problem of detection due to the absence of appropriate surveillance, communication and infrastructure⁴², focusing on providing primary health care thus working on prevention rather on acute diseases⁴³ and increasing mobile units to reach the larger number of people⁴⁴.

2.3. Management factors.

Other factors linked to conflict can be impediments for vaccination such as effective case management, immunization, health, education, disease surveillance and delivery mechanisms: loss of health staff, damage to infrastructure, insecurity and poor coordination⁴⁵. In conflict areas, IDPs and refugees are dependent on weakened or anti-government forces⁴⁶ and sometimes on anti-international fractions. These areas suffer from staff with no technical knowledge or inadequate experience, the absence of early warning networks, limited community outreach, simple and cost-effective methods⁴⁷.

Connolly underlines the challenge of insufficient resources to analyze, investigate and respond⁴⁸. They would also resolve important obstacles;

⁴¹ UNICEF, Eau, assainissement et Hygiène, [https://www.unicef.org/french/wash/3942_3952.html], 29 June, 2020.

⁴² Máire A. Connolly , Gayer et. Al, *Communicable diseases in complex emergencies: impact and challenges*, in *op. cit.*, p. 1975.

⁴³ Mario J. Azevedo, "Historical Perspectives on the State of Health and Health Systems," in *op. cit.* p. 3.

⁴⁴ *Ibidem*.

⁴⁵ Máire A. Connolly, Gayer et. Al, *Communicable diseases in complex emergencies: impact and challenges*, *op. cit.*

⁴⁶ *Ibidem*, p. 1974.

⁴⁷ *Ibidem*, p. 1979.

⁴⁸ *Ibidem*.

reaching isolated settlements that are unreachable by car and increasing coordination for remuneration of vaccinators⁴⁹.

Morbidity and mortality are avoidable if implemented in a “timely and coordinated manner.”⁵⁰ The establishment of more effective immunization and disease surveillance systems are crucial. It is also the case of site planning shelter; in an ideal situation, shelters should have adequate space in between to avoid overcrowding and high proximity between people, with access to water, fuel, transport, fertile soil and security and an environmental care with a solid waste management. Public education and sensitization to avoidable diseases and measures to prevent them are also important. Strategies should be cost-effective, feasible and should consider the speed of supply⁵¹ underlining the importance of technical matters.

Avoiding vaccine stock-out is another challenge; it is a situation when there is a complete absence of a particular vaccine or several vaccines⁵².

Increasing vaccine availability decreases replenishment time and stocks-out⁵³. The specificities of stocking and managing vaccines underlines the necessity of having a trained staff that can keep the vaccines active by ensuring the cold chain and the stocking condition. The staff should also be aware of the duration of the stockade so it can increase the availability of vaccines to ensure coverage of the highest number of people possible by avoiding their waste and avoid stock outs. The vector control, surveillance and surveys about mortality, morbidity, nutritional status and programs indicators are also crucial.

3. Context of conflict in Sierra Leone and Nigeria.

The choice of these Sierra Leone and Nigeria relies on the fact that both countries have undergone different types of conflicts; Sierra Leone having a civil war and insurgents war in Nigeria.

⁴⁹ Raoul Kamadjeu, “Immunizing nomadic children and livestock Experience in North East Zone of Somalia,” in *op. cit.*, p. 2638.

⁵⁰ Máire A. Connolly, Gayer et. al, “Communicable diseases in complex emergencies: impact and challenges,” in *op. cit.*, p. 1974.

⁵¹ *Ibidem*, p. 1979.

⁵² Chinwe Iwu, et al, “A scoping review of interventions for vaccine stock management in primary health-care facilities,” in *op. cit.*, p. 2667.

⁵³ *Ibidem*, p. 2668.

3.1. The Sierra Leone's Civil War

The civil war in Sierra Leone started on March 23, 1991, when the Revolutionary United Front of Sierra Leone (RUF/SL), led by Foday Saybana, wanted to mobilize 'people's army' in order to overthrow the 'All party' Congress regime of President Joseph Momoh⁵⁴. The RUF/SL tried to establish itself in an isolated region; in Kailahun and Pujehun Districts⁵⁵.

They had brutal terror tactics; with extremely motivated and drugged soldiers⁵⁶, but also with several abducted and captured border-zone youths⁵⁷. The RUF/SL was fighting a weak government army; the Republic of Sierra Leone military forces (RSLMF) that was copying the brutal tactics of the RUF/SL such as recruiting underage irregulars⁵⁸.

In April 1992, a *coup* from within the young soldiers of RSLMF led to the creation of the National Provisional Ruling Council (NPRC). The NPRC had an enlarged and poor army and officials rapidly got corrupted and engaged in the mining of alluvial diamonds⁵⁹. Several research points out that this resource is correlated with the onset of civil war, particularly national civil wars⁶⁰. Access to resources is a factor that engage people in war⁶¹.

In 1994, The RUF/SL led a raid against town Kabala resulting in the hostage of two British volunteer aid workers⁶². In January 1996 a ceasefire occurred for the resolution of the hostage crisis⁶³. NPRC split over the peace

⁵⁴ K. Peters, & Richards, "Why we fight': Voices of youth combatants in Sierra Leone," in *Africa*, no.2 Volume 68, 1998, pp. 183-210.

⁵⁵ *Ibidem*, p. 184.

⁵⁶ Paul Richards, "Sur la nouvelle violence politique en Afrique : le sectarisme séculier au Sierra Leone" in *Politique Africaine*, Volume 70, 1998, pp. 85-104.

⁵⁷ K. Peters, & Richards, "Why we fight': Voices of youth combatants in Sierra Leone," in *op. cit.*, p. 184.

⁵⁸ *Ibidem*.

⁵⁹ *Ibidem*, p. 185.

⁶⁰ Michael Ross, "A Closer Look at Oil, Diamonds, and Civil War," in *Annual Review of Political Science*, Volume 9, 2008, pp. 265-300.

⁶¹ Mathilde Leyendecker and Sergiu Mișcoiu, "The Flag Still Stands!" The Political Reconversion of the Internally Exiled Independentists of Casamance" in *Studia Europaea*, Volume 64, 2020, pp. 193-210.

⁶² K. Peters, & Richards, "Why we fight': Voices of youth combatants in Sierra Leone," in *op. cit.*, p. 185.

⁶³ *Ibidem*.

process and in January 1996, a putsch overthrew President Valentine Strasser⁶⁴. In March 1996, a parliamentary election was won by alliance, led by the Sierra Leone People's Party (SLPP) with former UN bureaucrat Ahmed Tejan-Kabbah⁶⁵. On November 30, 1996, the newly elected president and Foday Sankoh signed a peace agreement in Abidjan⁶⁶.

In February 1998, the Nigerian-led west African intervention force or ECOMOG took over the Freetown Peninsula⁶⁷ and President Kabbah is reestablished during a ceremony with the Nigerian president⁶⁸. In July 1999, a peace agreement is signed between Kabbah and Sankoh that was supposed to end an eight-year civil war; Sankoh who had to face the death sentence is pardoned and RUF will control the mine sector⁶⁹.

In May 2000, rebels from the RUF/SL killed several blue helmets and abducted hundreds of them, it is on the 17th that Sankoh is captured and jailed⁷⁰. On May 14, 2002, Kabbah is elected with seventy percent of the votes under an international surveillance and an important mission of peace led by the UN⁷¹ bringing the Sierra Leone's war to end. The civil war in Sierra Leone witnessed atrocities of war during ten years with an estimated of a hundred thousand deaths⁷².

⁶⁴ *Ibidem*.

⁶⁵ Universalis, Sierra Leone, chronologie contemporaine, [<https://www.universalis.fr/chronologie/sierra-leone/>], 29 June, 2020.

⁶⁶ UN, Conseil de Sécurité, [https://peacemaker.un.org/sites/peacemaker.un.org/files/SL_961130_PeaceAgreementSierraLeone-RUFSL%28fr%29.pdf], 29 June, 2020.

⁶⁷ K. Peters, & Richards, "Why we fight": Voices of youth combatants in Sierra Leone," in *op. cit.*, p. 186.

⁶⁸ Universalis, 5 février - 10 mars 1998 : Sierra Leone. La junte chassée du pouvoir par l'Ecomog [<https://www.universalis.fr/evenement/5-fevrier-10-mars-1998-la-junte-chassee-du-pouvoir-par-l-ecomog/>], 29 June, 2020.

⁶⁹ Universalis, 7 juillet: Sierra Leone. Signature d'un accord de paix, [<https://www.universalis.fr/evenement/7-juillet-1999-signature-d-un-accord-de-paix/>], 29 June, 2020.

⁷⁰ Universalis, 2-17 mai 2000 : Sierra Leone. Enlèvement de casques bleus et reprise des combats, [<https://www.universalis.fr/evenement/2-17-mai-2000-enlevement-de-casques-bleus-et-reprise-des-combats/>], 29 June, 2020.

⁷¹ Universalis, 14 mai 2002 : Sierra Leone. Victoire du président sortant aux élections générales, [<https://www.universalis.fr/evenement/14-mai-2002-victoire-du-president-sortant-aux-elections-generales/>], 29 June, 2020.

⁷² *Ibidem*.

3.2. The Nigerian conflict.

Nigeria had several conflicts around land possession opposing religions and ethnicities⁷³. After succeeding unstable governments and leaders, a conflict with Boko Haram started in 2009 and is ongoing. The group with the lead of Mohammed Ali, started as a radical Islamist youth one in Maiduguri and in 2002 declared the city and the Islamic establishment as “corrupted and irredeemable.”⁷⁴

They moved to Kanama where they set up a separatist community route based on radical Islamic principles. From there they preached an anti-state ideology and called other Muslims to join them in their quest of returning under the ‘true’ Islamic law⁷⁵.

In December 2003, the group engaged in conflict with the police around fishing rights in the local pond which led to the siege of the mosque until the following New Year and ended in the shootout of most of the group’s members and the killing of seventy members including the leader⁷⁶.

Slowly, the press attention was on this Nigerian Taliban particularly because members were sons of elites in the northern establishments. The survivors of the events went back to Maiduguri under the lead of Mohammed Yussuf and were left alone which gave them the opportunity to expand to other states as Bauchi, Yobe and the Niger state, it is when the neighbor’s cities started calling them Boko Haram or “Western education is forbidden.”⁷⁷

They were considered as a state within the state having a cabinet, religious police and a large farm, they offered welfare handouts, food and shelters which attracted many people, mainly refugees from war and jobless Nigerian Youth⁷⁸.

On the Eve of the presidential election taking place in 2007, Sheikh Ja’afar Mahmoud Adam; a popular cleric and regular preacher in Maiduguri who used to criticize Boko Haram was assassinated under the

⁷³ Universalis, Sierra Leone, chronologie contemporaine, in *op. cit.*

⁷⁴ Andrew Walker, United States Institute of peace, What is Boko Haram? [<https://permanent.access.gpo.gov/gpo30794/SR308.pdf>], 29 June, 2020.

⁷⁵ *Ibidem.*

⁷⁶ *Ibidem.*

⁷⁷ *Ibidem.*

⁷⁸ *Ibidem.*

orders of Mohammed Yussuf⁷⁹. In 2009, Nigeria witnessed several violent events of which the War in the Niger Delta⁸⁰.

In 2010, the radical group started campaigns of assassinations, detonated several bombs and robbed banks, cash in transit, convoys and successful businesses claiming that it was permitted by the Quran⁸¹. In 2011, they committed a suicide bombing into the UN compound killing twenty-three people and wounding many⁸². Since then, they launched almost weekly attacks expanded their activities to the state. In 2015, they expanded their activities to a regional level leading regional action against them; an alliance between Nigeria, Chad, Cameroon, Niger and Benin emerged⁸³.

On March 7, 2015, the insurgent group under the lead of Abubakar Shekau, formally swears allegiance to the emir Abu Bakr al-Baghdadi, head of the Islamic State (E.I.). Reports from 2016 show that Boko Haram is losing ground thanks to this alliance⁸⁴.

In 2018, clashes between Fulani breeders - Muslims - and Birom farmers - Christians - cause the death of more than two hundred people in the Plateau State⁸⁵. The conflict is about access to resources - land and water - which has worsened with global warming, overcrowding and government

⁷⁹ *Ibidem*.

⁸⁰ Universalis, 10-22 Mai 2009 : Nigeria. Guerre du pétrole dans le delta du Niger, [<https://www.universalis.fr/evenement/10-22-mai-2009-guerre-du-petrole-dans-le-delta-du-niger/>], 29 June, 2020.

⁸¹ *Ibid.*

⁸² Universalis, 26 Aout 2011 : Nigeria. Attentat contre le siège de l'ONU à Abuja, [<https://www.universalis.fr/evenement/26-aout-2011-attentat-contre-le-siege-de-l-o-n-u-a-abuja/>], 29 June, 2020.

⁸³ Universalis, 2-21 Février 2015: Nigeria. Régionalisation de la lutte contre Boko Haram, [<https://www.universalis.fr/evenement/2-21-fevrier-2015-regionalisation-de-la-lutte-contre-boko-haram/>], 29 June, 2020.

⁸⁴ Crisis Group, Boko Haram is losing ground – but will not be defeated by weapons alone, [<https://www.crisisgroup.org/africa/west-africa/boko-haram-losing-ground-will-not-be-defeated-weapons-alone>], 29 June, 2020.

⁸⁵ Universalis, 24 Juin 2018 : Nigeria. Violences entre éleveurs et agriculteurs, [<https://www.universalis.fr/evenement/24-juin-2018-violences-entre-eleveurs-et-agriculteurs/>], 29 June, 2020.

neglect⁸⁶. Fulani breeders, due to drought of Lake Chad⁸⁷, desertification and Boko Haram's terror, were pushed toward the South and used violence in order to grazing while Birom used auto-defense in order to protect their land⁸⁸.

Both ex-British colonies have been facing conflict that included resources which are favorable for sustaining conflict. In both countries young children are instrumentalized and used in combat which is a first challenge for the vaccination; the access to this vulnerable population. They both had Ebola outbreaks starting in Sierra Leone in May 2014⁸⁹ - which is ongoing- and in July 2014 in Nigeria - which ended later the same year⁹⁰. Sierra Leone is one of the poorest countries, its ranked 181 out of 187 countries⁹¹ and Nigeria is ranked 158⁹². They both face several avoidable diseases such as: Cholera, Dengue, Yellow Fever, Hepatitis A, Hepatitis B, Rabies and Tuberculosis⁹³⁻⁹⁴.

4. Case Study: Health Challenges and Responses in Sierra Leone and Nigeria

Conflict causes fragmentation, disintegration of institutions that help the vaccination programs. It worsens factors that could limit the spread, prevention, control and surveillance of viruses and bacteria. Sierra

⁸⁶ Julie Vandal, RFI, Dans le grenier du Nigeria, un interminable conflit pour l'accès aux ressources, 2019, [<http://www.rfi.fr/fr/afrique/20190214-middle-belt-nigeria-interminable-conflit-acces-ressources>], 29 June, 2020.

⁸⁷ The conversation, Au Nigeria, sous les conflits « ethniques », une crise environnementale sans précédent [<https://theconversation.com/au-nigeria-sous-les-conflits-ethniques-une-crise-environnementale-sans-precedent-95454>], 29 June, 2020.

⁸⁸ *Ibidem*.

⁸⁹ UN, La lutte contre Ebola au Sierra Leone: Memuna Mansaray à Mabella, [<https://ebolaresponse.un.org/fr/sierra-leone>], 29 June, 2020.

⁹⁰ Europe 1, Comment le Nigeria a vaincu le virus Ebola,"2014, [<https://www.europe1.fr/international/Comment-le-Nigeria-a-vaincu-le-virus-Ebola-685692>], 29 June, 2020.

⁹¹ UNDP, Sierra Leone, [<http://hdr.undp.org/en/countries/profiles/SLE>], 29 June, 2020.

⁹² UNDP, Nigeria, [<http://hdr.undp.org/en/countries/profiles/NGA>], 29 June, 2020.

⁹³ Institut Pasteur Lille, Vaccination et Recommandations pour : Nigeria, [<https://www.pasteur-lille.fr/vaccinations-voyages/?pays=Nigeria>], 29 June, 2020.

⁹⁴ Institut Pasteur Lille, Vaccination et Recommandations pour : Sierra Leone, [<https://www.pasteur-lille.fr/vaccinations-voyages/?pays=Sierra%20Leone>], 29 June, 2020.

Leone and Nigeria are two countries at risk of developing diseases because of conflict impediments such as overcrowded living conditions in urban centers, displacements and poor hygiene practice; these two countries are fragile and they have vulnerable settings with conflict making them at risk of widespread community transmission. Diseases could be avoidable if implemented in a timely and coordinated manner⁹⁵ in theory, but in conflicted area it is more complicated practically, given all the factors that I will develop.

The first responsible for providing health is the Ministry of Health.

During the civil war in Sierra Leone, the health infrastructure was destroyed; many clinics established by the government were demolished⁹⁶.

However, in government's-controlled areas the health care system continued to function in a lower quality and rebels'-controlled areas allowed health workers to provide limited services including child vaccination⁹⁷. But until the end of the war in 2002, the principal actors were the Ministry of Health and sanitation, UN organizations such as; WHO, UNICEF, international and local NGOs, community-based and faith-based organization, private health institutions, traditional healers, spiritual healers and drug outlets⁹⁸.

The Nigerian health system was decentralized into a three-tier structure: federal, state and local levels⁹⁹. The Federal Ministry of Health (FMOH) is responsible for policy, technical support and international relations, the State Ministry of Health is providing secondary hospitals, regulations and technical support for primary health care services while the local level is accountable for primary health care but there is a poor coordination and tracking which sows a duplication and confusion of

⁹⁵ Máire A. Connolly, Gayer et. Al, "Communicable diseases in complex emergencies: impact and challenges," in *op. cit.*, p. 1974.

⁹⁶WHO, Sierra Leone's long recovery from the scars of war, [<https://www.who.int/bulletin/volumes/88/10/10-031010/en/>], 29 June, 2020.

⁹⁷*Ibidem*.

⁹⁸ Rebuild Consortium, Country Situation analysis: Sierra Leone, [<https://assets.publishing.service.gov.uk/media/598af21840f0b619c913108f/country-situation-analysis-sierra-leone.pdf>], 29 June, 2020.

⁹⁹ WHO, The Nigerian health system, [<https://www.who.int/pmnch/countries/nigeria-plan-chapter-3.pdf>], 29 June, 2020.

roles¹⁰⁰ and underlines a poor governance. In Nigeria, over “40% of people below the 20% bracket or income levels are using health care from private for-profit insurers.”¹⁰¹ The destruction and lack of health establishments create a real access issue, in Nigeria, only 31% of the health facilities dealing with emergency cases have access to transportation, making it complicated for civilians to access them¹⁰². However, the Northern areas have extreme poverty, low literacy, few skilled health workers and are underserved by health services and have low immunization coverage, high maternal mortality and high infants under five mortality rates¹⁰³.

One problem for the analysis is the low levels of routine health data collation¹⁰⁴. The estimates show that the EPI immunization during the civil war in Sierra Leone is 56% (95% confidence interval [CI]: 50-62%) and the age-inappropriate immunization is 29% (95% CI: 24-34%)¹⁰⁵ whereas the estimates for overall proportion of fully immunized children in Nigeria was of 34.4% (95% CI: 27.0 - 41.9%) in 2016; 9.5% in the North West and 51.5% in the South, South Nigerian area¹⁰⁶.

Conflict and lack of health infrastructure generate delaying in reporting which can intensify epidemic situations. Moreover, there are shortages that occurs due to targeting staff members and volunteers; in Sierra Leone, Red Cross members were shot and killed, a lot of health professionals left the country which provoked a shortage of staff but international communities were supportive¹⁰⁷. In Nigeria, Boko Haram targeted humanitarian centers¹⁰⁸. While discussion with rebels over health can be overcome for

¹⁰⁰ *Ibidem*.

¹⁰¹ Mario J. Azevedo, “Historical Perspectives on the State of Health and Health Systems,” in *op. cit.*, p. 42.

¹⁰² Bonilla Chacin, “Improving primary health care delivery in Nigeria: evidence from four states”, in *World Bank* working paper, no. 187, 2010.

¹⁰³ Anne McArthur-Lloyd, “Community Engagement, Routine Immunization, and the Polio Legacy in Northern Nigeria,” in *Global Health Communication*, no.1, volume 2, 2016, pp. 1-10

¹⁰⁴ Davies Adeloye, “Coverage and determinants of childhood immunization in Nigeria: A systematic review and meta-analysis,” in *op. cit.*, p. 2872.

¹⁰⁵ Charles Senessie, “Delays in childhood immunization in a conflict area: a study from Sierra Leone during civil war,” in *Conflict and Health*, volume 1, 2007, pp. 1-14.

¹⁰⁶ Davies Adeloye, *op. cit.*, p. 2878.

¹⁰⁷ WHO, “Sierra Leone’s long recovery from the scars of war,” in *op. cit.*

¹⁰⁸ UN News, Major humanitarian hub in northeast Nigeria burned in attack, [<https://news.un.org/en/story/2020/01/1055641>], 29 June, 2020.

limited services as vaccination, cooperation with anti-vaccination groups as Boko Haram is an impediment. Moreover, routine immunization in Nigeria remains weak due to the lack of capacity of many establishments to keep vaccines refrigerated – 67%, stock of vaccines, regardless of location, is very low¹⁰⁹. In fact, the World Bank emphasis on the impact of the misperception of routine immunization, the inadequate cold chain equipment, the rejection of routine immunization due to fear and confusion and to low confidence and of trust – due to the health system that is ineffective – and the shortage of vaccines and immunization supplies¹¹⁰.

The coverage in Nigeria was the highest estimated at 81.5% in the early 1990s, of 30% in 1996 reaching the lowest in 2003 with a rate of 12.9%¹¹¹, in the same period of the emergence of the Nigerian Taliban. Immunization rates in Northern Nigeria are some of the lowest in the world; with 1% fully immunized infants in Jigawa, 1.5% in Yobe, 1.6% in Zamfara and 8.3% in Katsina¹¹²; Yobe being under Boko Haram threat, Zamfara being an affected state and Katsina and Jigawa being surrounded by affected and threaten areas in 2016¹¹³.

Possible factors would be the health-seeking behavior, the religion and the socio-cultural differences¹¹⁴. Davies explains the importance of the mother's social engagement, vaccine availability, misconception and safety concerns, the status of mothers and rumors and misinformation¹¹⁵. For Ngowu the achieve set objectives and programs of EPI failed due to literacy, Government expenditure on health and primary health care plan¹¹⁶. We should link poor literacy to Boko Haram's destruction of schools and the Government's education and health-related activities

¹⁰⁹ Bonilla Chacin, "Improving primary health care delivery in Nigeria: evidence from four states," in *op. cit.*

¹¹⁰ *Ibidem.*

¹¹¹ Davies Adeloje, *op. cit.*, p. 2877.

¹¹² Endurance A. Ophori, "Current Trends of Immunization in Nigeria: Prospect and Challenges," in *Tropical Medicine and Health*, no. 2, Volume 42, 2014, pp. 67-75.

¹¹³ ReliefWeb, Nigeria – Boko Haram Crisis – ECHO Daily Map | 01/04/2016, [<https://reliefweb.int/map/nigeria/nigeria-boko-haram-crisis-echo-daily-map-01042016>], 29 June, 2020.

¹¹⁴ Davies Adeloje, *op. cit.*, p. 2878

¹¹⁵ *Ibidem*, p. 2879.

¹¹⁶ Rufus Ngowu, "Reducing child mortality in Nigeria: A case study of immunization and systemic factors," in *Social Science and Medicine*, Volume 67, 2008, pp. 161-164

which plays a great role in immunization this would explain that in Muslim north areas, 6% are immunized while 44.6% infants are vaccinated in the Southeast¹¹⁷. In fact, Ekiti; a northeast and west region with stronger Islamic influence and a poor educational attainment have a very low immunization coverage¹¹⁸.

Polio vaccine's Boycott between 2002 and 2004 in Nigeria is a good example of the misinformation role. It led to a Polio Eradication initiative establishing a network of thousands of community mobilizers that increased awareness, understanding and acceptance of the vaccine¹¹⁹. The partnership for reviving routine immunization in Northern Nigeria; Maternal, Newborn and child health initiative was a success increasing third dose of Diphtheria, Tetanus and Pertussis vaccine (DTP3) from 5.1% in 2009 to 83.3% in 2013 and Oral polio vaccine or OPV3 from 25.7% in 2009 to 68% in 2013¹²⁰. The strategy was based firstly on generating community-wide social approval by including traditional social structure figures that have big influences over individuals - to face community pressure - secondly, by adopting a whole community approach and including women, finally by creating on the long term a norm¹²¹. The boycott generated a global health crisis that was political in origin since it was based on the discourse of several political leadership from Northern Nigerian states, according to which there was "evidence" that polio vaccine was contaminated with antifertility drugs intended to sterilize young Muslim Girls and was particularly enhanced in Kano¹²²; an affected state.

For Kaufmann, the diplomatic action implemented within the Nigerian political forces as religious leaders, the Organization of the Islamic Conference with the help of EMRO and international organizations such as UNICEF, Gavi, and the US Embassy in Nigeria allowed the end of the community resistance to vaccination and Government activities¹²³. This

¹¹⁷ Endurance A. Ophori, *op. cit.*

¹¹⁸ Anne McArthur-Lloyd, "Community Engagement, Routine Immunization, and the Polio Legacy in Northern Nigeria," in *op. cit.*

¹¹⁹ *Ibidem.*

¹²⁰ *Ibidem.*

¹²¹ Anne McArthur-Lloyd, *op. cit.*

¹²² Judith R. Kaufmann, "Diplomacy and The Polio Immunization Boycott in Northern Nigeria," in *Health Affairs*, no.4, volume 28, 2009, pp. 1091-101.

¹²³ *Ibidem.*

underlines the importance of the beliefs, rumors and misinformation that can be overcome by education, prevention, awareness supported by local influencers and credible leaders.

On the other hand, Sierra Leone had a DTP3 coverage of 13% in 1980 and of 83% in 1990; for each of EPI's targets, 75% of children between 12 and 23 months were fully immunized¹²⁴. Unfortunately, there is a lack of data during the civil war period, but in 2000 the immunization for all targeted avoidable diseases by EPI was similar or below 1988; there was immunization campaigns on national immunization coverage through mobile outreach team and it was a consequence of the efforts of the donor's agencies, especially UNICEF, Gavi¹²⁵ and the WHO, working together with the ministry of health. Donors contributed massively and 60 to 70% of the health care has been delivered by them¹²⁶. While they didn't reach a 100% because of the issues due to conflict, the strategy of vaccination's implementation was ready to be received by the people, which wasn't the case of Nigeria because of Boko Haram's ideology and impediments to acquiring non-Muslim products by cultivating fear, terror, misinformation and rumors. Thus, these two cases show the highly important nature of conflict that would be an impediment more or less to the implementation of vaccination and the key role of coordination and cooperation between international organization, NGOs, donors, the local influencers and community.

Conclusion

The vaccination process is long and can be politicized. Many actors such as International organizations, NGOs, Governments, local influencers and communities, play a key role depending on the conflict nature that would permit the success or the failure of the implementation of vaccination. While vaccination has several obstacles regarding conflict-affected areas, other impediments are related to the nature of the conflict and can be determinants in the success or failure of a strategy. The cases of Sierra Leone and Nigeria show that in a civil war EPI effort can be

¹²⁴ Charles Senessie, "Delays in childhood immunization in a conflict area: a study from Sierra Leone during civil war," *op. cit.*

¹²⁵ *Ibidem.*

¹²⁶ WHO, "Sierra Leone's long recovery from the scars of war," in *op. cit.*

sustainable and targets can be reached while in a conflict with insurgents, the success would be dependent on the beliefs and ideology that the group imposes and their dominance. Other actors should be included; the informal ones, even if the limitation is the lack of data. For instance, the origin of the decision to end the Polio vaccination Boycott by the governor of Kano is still unknown and doesn't seem to be formal. It would be interesting to take them into consideration as much as the influence of the diaspora – if it exists and is significant.

With the actual data, the Covid-19 situation highlights the importance of having a global appropriate surveillance of pandemics and epidemics based on coordination and clear communication. It underlines the need for a global epidemic preparedness and response plan but also how the nature of conflict will be a challenge. This new disease is an international problem that urges a global solution and highlights the importance of efficient mobilization in all types of conflict-affected areas.

With the halt to WHO funding by the USA¹²⁷, there might be even more obstacles to overcome.

Bibliography:

Adeloye, Davies (2017), "Coverage and determinants of childhood immunization in Nigeria: A systematic review and meta-analysis," in *Vaccine*, issue 22, Volume 35, 2871-2881.

Azevedo, Mario J. (2017), *Historical Perspectives on the State of Health and Health Systems in Africa*, Jackson, USA, Springer, p.10.

Beigbeder, Yves (2010), "Les Partenariats De L'organisation Mondiale De La Santé," in *Études internationales*, no.2, Volume 41, 233-251.

Chacin, Bonilla (2010), "Improving primary health care delivery in Nigeria: evidence from four states", in World Bank working paper, no. 187.

Connolly, Máire A., Gayer et. Al (2004), "Communicable diseases in complex emergencies: impact and challenges," in the *Lancet*, Issue 9449, Volume 364, 1974-1983.

¹²⁷ Reuters, Trump's halt to WHO funding prompts condemnation as coronavirus cases pass 2 million, [<https://www.reuters.com/article/us-health-coronavirus/trump-cuts-who-funding-over-coronavirus-global-death-toll-mounts-idUSKCN21X0AL?il=0>], 29 June, 2020.

Crisis Group, Boko Haram is losing ground – but will not be defeated by weapons alone, [<https://www.crisisgroup.org/africa/west-africa/boko-haram-losing-ground-will-not-be-defeated-weapons-alone>], 29 June, 2020.

Europe 1, Comment le Nigeria a vaincu le virus Ebola,"2014, [<https://www.europe1.fr/international/Comment-le-Nigeria-a-vaincu-le-virus-Ebola-685692>], 29 June, 2020.

Gavi, Santé : renforcer les chaînes d'approvisionnement pour mieux protéger les populations, [<https://www.gavi.org/fr/sante-renforcer-les-chaines-d-approvisionnement-pour-mieux-protoger-les-populations>], 29 June, 2020.

Holmberg, Christine (2017), "The Politics of Vaccination: A Global History" in Stuart Blume and Paul Greenough (eds.), Issue 4, Volume 50, Manchester: Manchester University Press, 741-743

Institut Pasteur Lille, Vaccination et Recommandations pour : Nigeria, [<https://www.pasteur-lille.fr/vaccinations-voyages/?pays=Nigeria>], 29 June, 2020.

— — — — —, Vaccination et Recommandations pour : Sierra Leone, [<https://www.pasteur-lille.fr/vaccinations-voyages/?pays=Sierra%20Leone>], 29 June, 2020.

Iwu, Chinwe, et al. (2019), "A scoping review of interventions for vaccine stock management in primary health-care facilities," in *Human Vaccines and Immunotherapeutics*, no. 11, Volume 15, 2666-2672.

Kamadjeu, Raoul (2015), "Immunizing nomadic children and livestock Experience in North East Zone of Somalia," in *Human Vaccines and Immunotherapeutics*, 11, 11, 2637-2639

Kaufmann, Judith R. (2009), "Diplomacy and The Polio Immunization Boycott in Northern Nigeria," in *Health Affairs*, no.4, volume 28, 1091-101.

Lee, Kelley (1998), *Historical Dictionary of the World Health Organization*, Lanham, Md.; London: Scarecrow, 25-26.

Leyendecker, Mathilde and Mișcoiu, Sergiu (2020), ""The Flag Still Stands!" The Political Reconversion of the Internally Exiled Independentists of Casamance" in *Studia Europaea*, Volume 64, 193-210.

- McArthur-Lloyd, Anne, Community Engagement, Routine Immunization, and the Polio Legacy in Northern Nigeria, in *Global Health Communication*, no.1, volume 2, 2016: 1-10
- Ngowu, Rufus (2008), "Reducing child mortality in Nigeria: A case study of immunization and systemic factors," in *Social Science and Medicine*, Volume 67, 161-164
- Opal, Steven M (2010), "A Brief History of Microbiology and Immunology" in *Vaccines: a Biography*, ed. Artenstein A., New York: Springer, 31-56.
- Ophori, Endurance A., "Current Trends of Immunization in Nigeria: Prospect and Challenges," in *Tropical Medicine and Health*, no. 2, Volume 42, 2014: 67-75.
- Peters, K., & Richards, "‘Why we fight’: Voices of youth combatants in Sierra Leone," in *Africa*, no.2 Volume 68, 1998, p.183-210.
- Rebuild Consortium, Country Situation analysis: Sierra Leone, [<https://assets.publishing.service.gov.uk/media/598af21840f0b619c913108f/country-situation-analysis-sierra-leone.pdf>], 29 June, 2020.
- ReliefWeb, Nigeria – Boko Haram Crisis – ECHO Daily Map | 01/04/2016, [<https://reliefweb.int/map/nigeria/nigeria-boko-haram-crisis-echo-daily-map-01042016>], 29 June, 2020.
- Reuters, Trump's halt to WHO funding prompts condemnation as coronavirus cases pass 2 million, [<https://www.reuters.com/article/us-health-coronavirus/trump-cuts-who-funding-over-coronavirus-global-death-toll-mounts-idUSKCN21X0AL?il=0>], 29 June, 2020.
- Richards, Paul, "Sur la nouvelle violence politique en Afrique : le sectarisme séculier au Sierra Leone" in *Politique Africaine*, Volume 70, 1998, 85-104.
- Ross, Michael, "A Closer Look at Oil, Diamonds, and Civil War," in *Annual Review of Political Science*, Volume 9, 2008, 265-300.
- Schlipkötter, Ursula and Flahault, Antoine, "Communicable Diseases: Achievements and Challenges for Public Health," in *Public Health Reviews*, no.1, Volume 32, 2010, 90-119.
- Senessie, Charles, "Delays in childhood immunization in a conflict area: a study from Sierra Leone during civil war," in *Conflict and Health*, volume 1, 2007, 1-14.

Stein, R.A., "Political will and international collaborative frameworks in infectious diseases," in *International Journal of Clinical Practice*, no. 1, volume 69, 1, 2015, 41-48.

The conversation, Au Nigeria, sous les conflits « ethniques », une crise environnementale sans précédent [<https://theconversation.com/au-nigeria-sous-les-conflits-ethniques-une-crise-environnementale-sans-precedent-95454>], 29 June, 2020.

UN, Conseil de Sécurité, [https://peacemaker.un.org/sites/peacemaker.un.org/files/SL_961130_PeaceAgreementSierraLeone-RUFSL%28fr%29.pdf], 29 June, 2020.

— —, La lutte contre Ebola au Sierra Leone : Memuna Mansaray à Mabella, [<https://ebolaresponse.un.org/fr/sierra-leone>], 29 June, 2020.

UN News, Major humanitarian hub in northeast Nigeria burned in attack, [<https://news.un.org/en/story/2020/01/1055641>], 29 June, 2020.

UNDP, Nigeria, [<http://hdr.undp.org/en/countries/profiles/NGA>], 29 June, 2020.

UNDP, Sierra Leone, [<http://hdr.undp.org/en/countries/profiles/SLE>], 29 June, 2020.

UNICEF, Eau, assainissement et Hygiène, [https://www.unicef.org/french/wash/3942_3952.html], 29 June, 2020.

UNICEF, Immunization program, [<https://www.unicef.org/immunization>], 29 June, 2020.

Universalis, 5 février - 10 mars 1998 : Sierra Leone. La junte chassée du pouvoir par l'Ecomog [<https://www.universalis.fr/evenement/5-fevrier-10-mars-1998-la-junte-chassee-du-pouvoir-par-l-ecomog/>], 29 June, 2020.

— —, 2-17 mai 2000: Sierra Leone. Enlèvement de casques bleus et reprise des combats, [<https://www.universalis.fr/evenement/2-17-mai-2000-enlevement-de-casques-bleus-et-reprise-des-combats/>], 29 June, 2020.

— —, 2-21 Février 2015 : Nigeria. Régionalisation de la lutte contre Boko Haram, [<https://www.universalis.fr/evenement/2-21-fevrier-2015-regionalisation-de-la-lutte-contre-boko-haram/>], 29 June, 2020.

— —, 7 juillet: Sierra Leone. Signature d'un accord de paix, [<https://www.universalis.fr/evenement/7-juillet-1999-signature-d-un-accord-de-paix/>], 29 June, 2020.

- —, 10-22 Mai 2009: Nigeria. Guerre du pétrole dans le delta du Niger, [<https://www.universalis.fr/evenement/10-22-mai-2009-guerre-du-petrole-dans-le-delta-du-niger/>], 29 June, 2020.
- —, 14 mai 2002: Sierra Leone. Victoire du président sortant aux élections générales," [<https://www.universalis.fr/evenement/14-mai-2002-victoire-du-president-sortant-aux-elections-generales/>], 29 June, 2020.
- —, 24 Juin 2018: Nigeria. Violences entre éleveurs et agriculteurs, [<https://www.universalis.fr/evenement/24-juin-2018-violences-entre-eleveurs-et-agriculteurs/>], 29 June, 2020.
- Universalis, 26 Aout 2011: Nigeria. Attentat contre le siège de l'ONU à Abuja, [<https://www.universalis.fr/evenement/26-aout-2011-attentat-contre-le-siege-de-l-o-n-u-a-abuja/>], 29 June, 2020.
- —, Sierra Leone, chronologie contemporaine, [<https://www.universalis.fr/chronologie/sierra-leone/>], 29 June, 2020.
- Vaccination-info.be, L'histoire de la vaccination, [<https://www.vaccination-info.be/histoire-de-la-vaccination/>], 29 June, 2020.
- Vandal, Julie, RFI, Dans le grenier du Nigeria, un interminable conflit pour l'accès aux ressources, 2019, [<http://www.rfi.fr/fr/afrique/20190214-middle-belt-nigeria-interminable-conflit-acces-ressources>], 29 June, 2020.
- Walker, Andrew, United States Institute of peace, What is Boko Haram? [<https://permanent.access.gpo.gov/gpo30794/SR308.pdf>], 29 June, 2020.
- WHO, EPI logistics, [https://www.who.int/countries/eth/areas/immunization/epi_logistics/en/index1.html], 29 June, 2020.
- —, Module 5: Vaccine Safety institutions and mechanisms, WHO [<https://vaccine-safety-training.org/national-immunization-programmes.html>], 29 June, 2020.
- —, Qu'est-ce que la couverture universelle en matière de santé, [https://www.who.int/features/qa/universal_health_coverage/fr/], 29 June, 2020.
- —, Sierra Leone's long recovery from the scars of war, [<https://www.who.int/bulletin/volumes/88/10/10-031010/en/>], 29 June, 2020.

WHO, The Nigerian health system, [<https://www.who.int/pmnch/countries/nigeria-plan-chapter-3.pdf>], 29 June, 2020.

— —, Yemen, Update on the Expanded Program on Immunization, December 2019, [<https://reliefweb.int/report/yemen/update-expanded-programme-immunization-december-2019>], 29 June, 2020.

