# Impact of COVID-19 on the Continuum of care.

## *A situational analysis of vaccination activities in 11 health facilities in the Bangem Health District*

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## 1. Background

The outbreak of the novel coronavirus disease (widely referred to as COVID-19), caused by the Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2), was first reported in Wuhan (Hubei province) China in December 2019. By January 30, 2020, WHO Director General declared that the outbreak constitutes a Public Health Emergency of International Concern (PHEIC) [1]. The virus has since December 2019, spread to all the 7 continents of the world. The highest concentration of infected persons has shifted several times since mid-February 2020 from China to Iran, and then to Italy and Spain and is presently in the United States of America, India and Latin America and [3]. According to The Lancet, it is inevitable that Africa will be experiencing the next wave of infections [4]. Africa as of November 2nd, 2020, had registered more than 1.8 million cases and over 43 thousand deaths, thus contributing to about 3.9% of the global caseload and to about 3.6% of the global death roll [**Error! Reference source not found.**].

It is thought that the high burden of disease (both communicable and non-communicable), weak and under-resourced health systems, high levels of poverty and poor housing, limited access to clean water and sanitation, inadequate transport and energy infrastructure, and high population mobility, would inevitably lead to the COVID-19 pandemic having a devastating economic, social and health impact across Africa [3]. As researchers still battle to find a vaccine, and the absence of pre-existing immunity due to the novelty of the virus, there are several reasons to foresee devastating consequences of large outbreaks of COVID-19 in Africa's routine health care activities. Possible reasons for this expected devastating consequences include; fear of the population to get infected when accessing health services, stigma, collapse of health care facilities due to little or no capacity as clinical teams repurpose their activities to the response; as well as re-prioritization of resources by governments towards COVID-19 and thus a deviation from other (routine) activities. All of these are expected in a context which was already facing challenges in the pre-COVID-19 era [6].

It has been reported that more than 20 countries have suspended their vaccination campaigns in order to cope with the new coronavirus threat [7]. WHO weekly bulletin number 42, on outbreaks of October 27, 2020 identified several African countries experiencing outbreaks of vaccine preventable diseases such measles, polio, cholera, yellow fever etc [8]. Although most of these outbreaks were present in the pre-COVID-19 era, their control and management has been significantly affected by the COVID-19 and the accompanying measures put in place to limit its spread [7,8].

In as much as several studies relating to the impact of COVID-19 on care have been published, focused has been based on modelling [9,10,11] and anticipations that the COVID-19 disease and measures

taken to curb its spread will present unprecedented difficulties among vulnerable segments of society to access essential services.

## 2. Study Rationale, Aim and Objectives

The Cameroon Demographic and Health Survey (DHS) report show that the country made great progress in achieving the MDGs, although much must still be done. According to the survey, just over half (52%) of children age 12-23 months had received all basic vaccinations (one dose each of BCG and measles and three doses each of DPT-containing vaccine and polio) [12]. All 10 regions of the country had vaccine coverage of less than 75% for children aged 12-23 months who had received all basic vaccines. It is important to note here that 95% percent coverage is required to ascertain herd immunity for most vaccines. It is therefore evident that vaccination activities within the country were already facing serious problems in the pre-COVID-19 era.

The COVID-19 pandemic is new and constantly evolving. There is a paucity of evidence to guide the response to it. Moreover, it is challenging but essential to evaluate the effects of and the response to the pandemic, especially in settings where resources are limited, and health care systems strained and fragile. Models are a useful tool to provide possible scenarios at a larger scale, but they do not replace real data and they need to be populated with programmatic data from real world settings. This analysis therefore looks at the impact of COVID-19 on vaccination activities in Bangem health district of Cameroon from the period of January 2019 to September 2020

### 2.1. Aim

The aim of this article is to describe the impact of the pandemic on non-COVID-19 related routine health activities in 11 health care facilities in the Bangem health district, to better adapt and orient activities for the rest of the duration of the pandemic or in the future as some expected impact might last longer.

### 2.2. Objectives

The objective of this article is to:

i. Describe monthly trends in uptake of vaccination activities during the pandemic period and during the same period in 2019 in 11 health facilities in the Bangem health district.
ii. To verify if there is a statistically significant difference in the number of children vaccinated with the Measles, Polio, Penta and BCG vaccines during the pandemic period and during the same period in 2019 in 11 health facilities in the Bangem health district.

## 3. Methodology

The study employed a retrospective study design. In order to describe monthly trends in the uptake of vaccination activities (in the Bangem health district) during the pandemic period and during the same period in 2018, DHIS2 data for 11 health care facilities in the Bangem district for the period from January 2019 to September 2020, was used. To verify if there is a statistically significant difference in the number children vaccinated with the Measles, Polio, Penta and BCG vaccines during the pandemic period and during the same period in 2019 in the 11 health facilities, the Z-test (two-sample for means) was used. Analysis was done using Microsoft Excel for Office 365 MSO (16.0.12527.21230) 64-bit

## 4. Results

### 4.1. Monthly trends in the uptake of vaccination activities during the pandemic period and during the same period in 2019 in 11 health facilities in the Bangem health district.

The monthly number of children vaccinated with the measles vaccine was found to be relatively steady from January 2019 to November 2019, after which there was is a sharp drop in the number of children vaccinated in December 2019. The number of children vaccinated with measles vaccine again reached expected values again in July 2020 and experience an upward trend up to September 2020 ***(Figure 1a).***

The monthly number of children vaccinated with the Polio vaccine was found to be relatively steady from January 2019 to August 2019. However, there was a sharp rise in the number of children vaccinated in June 2019. From August 2019 up to November 2019, there was a steady drop in the number of children vaccinated against Polio, which was further pronounced in December 2019. The polio numbers slightly increased in January 2020 and remained fairly constant up to September 2020 ***(Figure 1b)***.

The monthly number of children vaccinated with the Penta vaccine followed very similar trends as with those vaccinated with the Polio vaccine. Numbers were relatively steady from January 2019 to August 2019, with a sharp rise in the number of children vaccinated in June 2019. From August 2019 up to November 2019, there was a steady drop in the number of children vaccinated just as seen with Polio, which was again further pronounced in December 2019. The numbers slightly increased in January 2020 and did not change much on a monthly basis up to September 2020 ***(Figure 1c)***.

With respect the number of children vaccinated with the BCG vaccine, there was a steady rise in the number of children vaccinated from January 2019 to June 2019. Thereafter, there was a fluctuation in the number of children vaccinated (between 27 and 40) up to June 2020. There is an observed steady decrease in the number of children vaccinated form July 2020 up to September 2020 ***(Figure 1d)***.

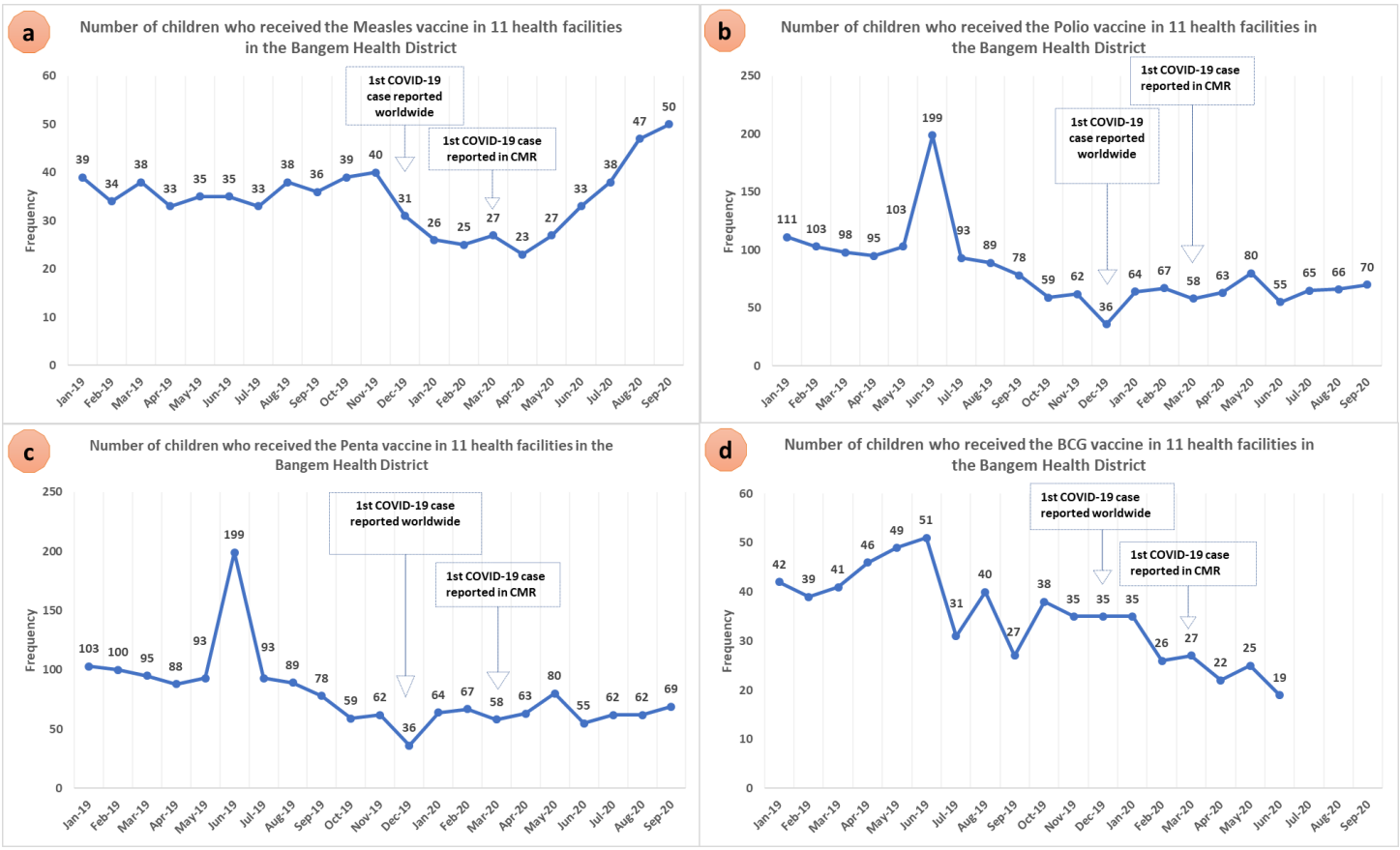


*Figure 1: Monthly trends in the number of Children who received the Measles, Polio, Penta and BCG Vaccines in the Bangem Health District, SWR, Cameroon*

### 4.2. Yearly differences in the number children vaccinated with the Measles, Polio, Penta and BCG vaccines during the pandemic period and during the same period in 2019 in 11 health facilities in the Bangem health district.

A comparison of the number of children vaccinated with the measles vaccine within the same time periods in 2019 and 2020 show a decrease in the number in 2020 from January to June. However, the number of children vaccinated was found to be higher in 2020 when compared to 2019 in the months of July, August and September. ***(Figure 2a).*** The average number of children vaccinated with the measles vaccine in 2019 was however found not be statistically different when compared to the average number of children vaccinated with the measles vaccine within the same period in 2020 (with a p value of 0.42).

Comparing the number of children vaccinated with the Polio vaccine within the same time periods in 2019 and 2020 show a decrease in the number in 2020 ***(Figure 2b).*** Statistically**,** the average number of children vaccinated with the polio vaccine in 2019 was found be statistically different when compared to the average number of children vaccinated with the polio vaccine within the same period in 2020 (with a p value < 0.01).

A statistically significant difference (with a p value of 0.01) in the average number of children vaccinated with the Penta vaccine in 2019 when compared to the average number of children vaccinated with the same vaccine within the same period in 2020 is also observed ***(Figure 2c)***.

Due to no data on BCG form July to September 2020, the statistical test of significance was performed on the first six months for 2019 and 2020. A statistically significant difference was observed in average number of children vaccinated with the BCG vaccine in 2019 when compared to the average number of children vaccinated with the same vaccine within the same period in 2020 (with a p value < 0.01) ***(Figure 2d)***.

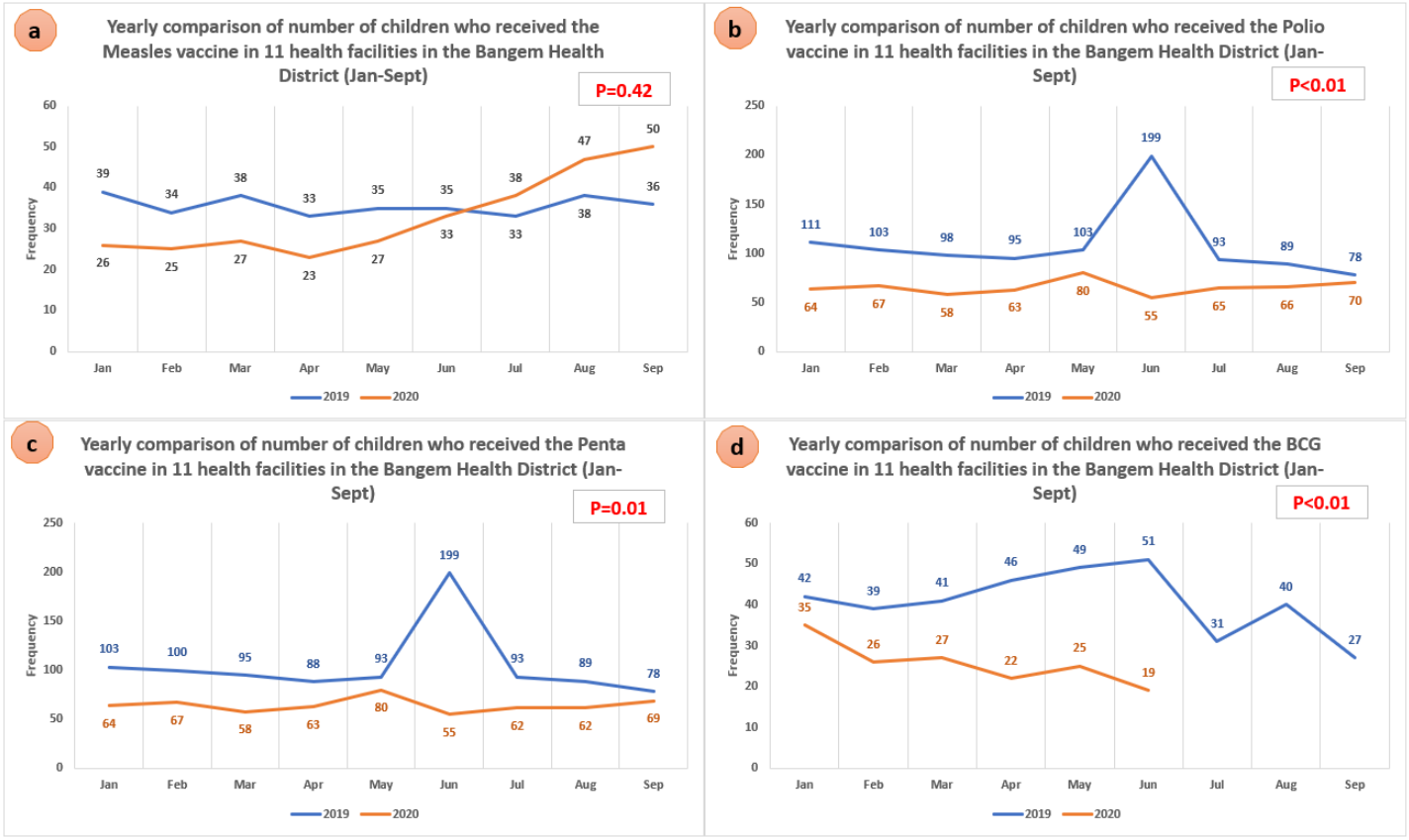


*Figure 2: Yearly comparison of the number of children who received the Measles, Polio, Penta and BCG vaccines in the Bangem Health District, SWR, Cameroon*

## 5. Discussion and Conclusion

There is a drop in the number of children vaccinated in the Bangem Health district in 2020 compared to 2019. Although multiple factors could account for this drop in number of children vaccinated in 2020 compared to 2019, the fact that this drop coincides with the advent of COVID-19 in December 2019, makes COVID-19 the primary attributable reason for the drop of cases observed.

## 6. Recommendations

- An extensive qualitative research with community participants and health workers could provide more reasons as to why there is a drop in the number of children vaccinated.

- Creation of a reassuring environment with adequate Infection, prevention and control measures at the level of health facilities could be a great source of encouragement to the population to bring their children for vaccination.
- Continuous sensitisation of the population with very clear messages on the importance of vaccination for children to boost uptake.
- Ascertain vaccine supplies and the required cold chain to preserve them at the level of the Bangem health district.
- Carryout a more detailed mixed methods study at national level to ascertain the level of impact COVID-19 has had in other areas on routine health care (HIV, TB, Maternal health, Sexual Reproductive Health, etc.)

## 7. References


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