

Covid-19 Cases Surge in a Security Compromised Region of Cameroon

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Abstract

Introduction

The emergence of more transmissible SARS-CoV-2 variants like the Delta has triggered a third wave of Covid-19 with increasing morbidity and mortality in many parts of the world. Here we report a surge in Covid-19 cases and deaths in the Northwest (NW) region of Cameroon, which has been plagued with low immunization coverage and an ongoing armed conflict.

Method

A cross sectional study was carried out from August to September, 2021 and data on Covid-19 cases and vaccination coverage were reviewed from the data base of the Ministry of Health, while data on the security situation of the region was obtained from the district and regional health managers. Data were analyzed with MS excel and the results presented as trends and proportion.

Results

As of 4th September, 2021 there was a total of 7,499 confirmed Covid-19 cases in the region. In Epidemiological week 34-35 (22-August to 04-September), 2021, there was a surge in Covid-19 cases in the NW. More than 70% of all covid-19 related deaths reported in the country was recorded in this region during epidemiologic week-35. Despite this high mortality, Covid-19 vaccine uptake remains very low in the region. Indeed, just 0.6% of the 962,036-target population have been fully immunized after 6 months of Covid-19 vaccine rollout.

Conclusion

Though the country's epi curve does not suggest a third wave at this time, the NW is experiencing a steady Covid-19 case surge amid insecurity and the circulation of the Delta variant. There is therefore a need to strengthen disease prevention through vaccination and surveillance in this region.

Introduction

Covid-19 remains one of the greatest public health challenges in recent times. As of 7th September, 2021, the disease has been confirmed in over 222 million people, and has resulted into over 4.6 million deaths worldwide [1]. Since the emergence of more transmissible severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) variants, like the Delta, many more persons around the world have been infected and more countries are experiencing their next waves of the disease, which is characterized by an increased morbidity and mortality [2].

In Cameroon, the first case of Covid-19 was reported in March 2020 in the capital city, Yaoundé [3]. Since then, the number of cases has been increasing steadily, and as of September 2021, the country has registered nearly 90,000 confirmed cases with 1,357 deaths [4]. Until now, most of the Covid-19 cases

were limited to two of the most populous regions in the country- the Center and Littoral regions [4]. By 13 August, 2021, Cameroonian health authorities reported the circulation of the Delta variant in the country following its isolation from samples collected between May and July, 2021 in two of the most populous regions of the country- the littoral and center regions [5, 7]. Despite its isolation in these two regions, the variant is yet to be reported from other regions of Cameroon, including the NW.

The NW has conditions that may enhance the propagation of the Delta variant, including the ongoing sociopolitical crisis for over 5 years now. This crisis has resulted into massive internal displacement of the population, looting and destruction of health facilities and killing of healthcare workers, which collectively has led to a disruption of the healthcare system in the region [8, 15]. Given the risk associated with the circulation of the Delta variant for over 4 months now in the country [5, 7], we decided to assess the evolution of the incidence of Covid-19 cases in the NW region in a context of insecurity and low Covid-19 vaccination coverage.

Method

2.1. Study setting

This study was carried out in the NW Region of Cameroon. This region is a home to close to 2.5 million inhabitants, majority of whom reside in rural areas where they are involved in farming for their livelihood. Over 40% of the population is aged 18 years and above.

The region has a total of 19 health districts and each of these districts is led by a district medical officer. Each health district is further sub-divided into health areas (247 health areas in total for the region), which are led by a chief of health area, who by default is the head of the leading health facility within the health area. Each of these health areas has at least one health facility which could be public or private [9].

The region lacked a robust laboratory diagnostic capacity which could identify and characterize emergent pathogens including SARS COV-2. For instance, during the onset of the pandemic, samples collected from the region had to be shipped to Centre Pasteur of Cameroon located in the center region for analysis. This invariably affected the turnaround time for returning the results to patients. From June, 2020, like in the rest of the country, the region benefitted from rapid antigen screening test which permitted quick identification of cases in all major health facilities across the region [10]. In addition, COVID-19 care centers were set up in the region for the management cases [10].

In April, 2021, Covid-19 vaccination centers were set up to support the delivery of Covid-19 vaccines to persons 18 years and above. In total, 23 vaccination centers were identified and accredited across the region, with each health district having at least one vaccination site. These sites began delivering Sinopharm and Covishield vaccines in April, 2021 and given in two doses separated by 3 weeks and 8 weeks respectively for full immunization. Johnson and Johnson vaccine was later added in July 2021 given as a single dose for complete immunization. Vaccination services against covid are offered in these fixe vaccination sites on daily basis and in the community during outreach vaccination activities.

2.2. Study procedure

The data for this cross-sectional study were collected from August to September 2021. Covid-19 surveillance data were obtained from weekly epidemiological reports from the region and the national public health operation center. The covid-19 vaccination data were obtained from the district health information software (Dhis)-2. A pretested questionnaire was used to abstract key variables, including the security profile of the health districts of the region from 2020 to September, 2021. This security situation was updated to the already existing data for the previous four years as reported earlier [9]. The questionnaires were filled by the regional and district managers of the NW region. The investigation team then resolved any identified data discrepancy by directly calling the regional head or the district medical officers concerned.

2.3. Data management and analysis.

The data were analyzed with Microsoft Office Excel 2019 and summary statistics was used to estimate incidence, prevalence, case fatality and vaccination coverage. In addition, Quantum Geographic Information System (QGIS) was used to spatially display the security status of the region in maps.

3. Results

3.1. Evolution of Security profile

The region began experiencing insecurity in late 2016 following the onset of sociopolitical crisis that degenerated into an armed conflict [9]. As shown in Figure 1, the security situation in the region deteriorated overtime and today, all districts of the region are considered to be in highly insecure.

3.3. Evolution of Covid-19 Cases in the region.

By 4th September, 2021 (end of epidemiological week 35), the region had registered a total of 7,499 confirmed cases of Covid-19 (Figure 2), 53% of whom are males. Of this number 84% have recovered. Figure 2 also presents the evolution of Covid-19 cases in the region. As illustrated, the region experienced a surge in its epi-curve, marked by a sudden rise in the number of new cases, from just nine in epidemiological week 29 to 491 in epidemiological week 35. Also, Bamenda health district recorded the highest incidence at week 35 and also the highest prevalence (Table. 1) of Covid-19 and accounted for over 64% of all cases recorded in the region during epidemiological week-35. Over 69% of cases reported in Cameroon on week-35 originated from the NW region. This surge in Covid-19 cases in the NW, however, does not seem to be reflected in the national epi curve, as the curve shows a minimal increase in new cases during this period (Figure 4).

3.3. Evolution of Covid related deaths in the region.

Overall, the region has recorded 336 Covid-19 related deaths. Figure 3 illustrates the evolution of deaths during the first and second wave in the region. It also depicts a jump in the number of deaths between

week-29 and week-35, with the number rising from just one in week-29 to 13 in week-35. And, over 50% of these deaths were recorded in the regional capital of Bamenda. In week-35, the region accounted for over 65% of all Covid-19 related deaths in Cameroon. Overall, the region currently has a case fatality rate of 4.4%, which is two times the national average.

3.4. Covid-19 vaccines uptake in the region

The Covid-19 immunization coverage for the region remains very low with just 2.4% of the target population (persons aged 18 years and above: 962 036) receiving at least a dose of the available Covid-19 vaccine. Also, just 0.6% of this target population has been fully immunized by the end of epidemiological week-35 of 2021,

Discussion

The NW region of Cameroon, like the rest of the country, was affected by the Covid-19 pandemic in early 2020. Since then, the region has experienced two waves of the pandemic [4] with the last case surge recorded in the first half of 2021 (Fig. 2).

The region is recently experiencing a surge in its epi-curve, with the number of new cases doubling on a weekly basis since week-30 of 2021 (Fig. 2). In week-34 and 35, more than 60% of all covid-19 related deaths recorded in the country were reported from this region [4]. Among the new cases reported in the region, 64% of cases and 50% of deaths were recorded in Bamenda health district. It is worth noting that the sudden rise in cases and deaths is occurring after the detection of the Delta variant in the country and this raises the question on whether the more infectious Delta variant with a higher risk of severe disease, hospitalization, and death is not circulating in the region [6, 11]. The situation in this region remains alarming for the country whose national epi curve does not suggest a third wave of Covid-19 at this time (Fig. 4). Laboratory capacity to investigate this surge are lacking and at this point, it may be difficult to detect the circulation of a Delta variant in this region. To detect the variant, samples collected from suspected cases must be sent out of the region for sequencing and this may take long for the results to be made available. Indeed, when the Delta variant was first suspected in the country, samples were collected in May, 2021, but the confirmation on the circulation of this variant was only published three months later [5, 7]. This long turnaround time coupled with the prevailing insecurity in the region[9] may result into more infections and deaths from this varus in the region.

Despite this concerning situation, vaccine uptake remains low in the region. Currently, just 2.4% of the target population in the region has received at least one dose of any of the available Covid-19 vaccines. In addition, just over 0.6% have received the full doses recommended to ensure full immunization for either of the available vaccines. This limited vaccine uptake continues to flourish in this setting partly due to vaccine hesitance [14] and challenges related to delivering vaccines in this security compromised area [9]. As a result, the risk of infection and severe disease in this population remains particularly high in light of the evidence of the circulation of the Delta variant in the country [15]. To counter this risk, there is the

urgent need to scale up Covid-19 vaccination in this region to prevent severe disease and limit the emergence of new strains [12, 13].

To the best of our knowledge, this is the first systematic report on the surge of Covid-19 cases in a region that has been suffering from an arm conflict for over 5 years [9]. Despite this contribution, this piece of work has some limitations. Firstly, the primary data were collected in a context of insecurity and this could have introduced some bias into the data. Also, the denominator used to calculate coverages was based on estimates from the central level, which may not necessarily reflect the real situation on the ground bearing in mind the current population movement reported in this region since the onset of the sociopolitical crisis [16]. Despite these limitations, we remain hopeful that this study will stimulate more research to clearly elucidate the reasons for the surge in Covid-19 cases in the NW. This may be important now that there is evidence of the Delta variant circulating in the two major cities in Cameroon. Further research may also help elucidate why the national epi curve does not suggest a third wave even though there is evidence of a third wave in this region.

Conclusion

The findings in this study suggest a sudden Covid-19 case surge and deaths in the NW region of Cameroon in the context of insecurity, circulating Covid-19 Delta variant in a context of low vaccine uptake. Though the Delta variant has not yet been isolated in this region, the risk of a local outbreak linked to the variant remains. There is, therefore need to strengthen SARS CoV-2 genomic surveillance in this region and to develop strategies to improve Covid-19 immunization coverage and the respect of other measures to limit the spread of the disease.

Abbreviations

Covid: Coronavirus disease, **Dhis2:** District health information software, **NW:** Northwest, **SARS CoV:** Severe acute respiratory syndrome coronavirus, **PCR:** polymerase chain reaction, **QGIS:** Quantum Geographic Information System

Declarations

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Availability of data and Materials

The datasets used during this study might be obtained from the corresponding author on request. Part of this data can also be directly obtained from the Dhis 2 data base of this region.

Contributions

NAA conceived the idea of the study. NAA, CC, ME, NR contributed to data collection, analysis and interpretation. NAA prepared the first draft of manuscript and YS edited the first draft. ME, CK, SCN, CC, HBB, NR, NAA, YS reviewed and edited the final manuscript. All authors approved the final version of the manuscript.

Ethics declarations

This was a secondary study that used data abstracted from existing Ministry of Health data bases. So, no ethics approval and consent to participate were required.

Consent for publication

Not applicable.

Competing interests

The authors declare that they have no competing interests

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Tables

Table 1: Covid-19 Cases per Health District of the Northwest Region

Health District	Total Population	Incidence/1000 Epi Week 35	Prevalence/1000	Case Fatality (%)
AKO	58862	0,0	0,8	0,0
BAFUT	60843	0,5	2,5	0,6
BALI	37103	0,1	5,0	0,5
BAMENDA	429419	0,6	7,0	5,8
BATIBO	95150	0,0	0,4	2,4
BENAKUMA	60794	0,0	0,6	0,0
FUNDONG	158243	0,1	5,0	6,0
KUMBO EAST	159554	0,4	2,9	7,8
KUMBO WEST	113508	0,1	5,3	2,6
MBENGWI	56469	0,0	2,5	2,8
NDOP	275603	0,0	1,3	1,1
NDU	95914	0,3	2,2	2,4
NJIKWA	23017	0,0	0,8	0,0
NKAMBE	147968	0,0	3,3	4,7
NWA	65599	0,0	0,9	0,0
OKU	101536	0,0	1,2	2,5
SANTA	101176	0,2	2,5	1,2
TUBAH	69999	0,2	5,6	0,8
WUM	135546	0,1	1,9	5,8
North West	2246303	0,2	3,4	4,4

The table presents the total population for each of the health districts and for the entire NW region. Also, the table presents the incidence of Covid-19 cases for epidemiological week-35 of 2021. It further presents the prevalence of Covid-19 cases from the onset of the outbreak till week-35 of 2021 per district and for the entire region. Finally, the table presents the case fatality per district and for the region from the onset of the outbreak till week-35 of 2021. The prevalence is calculated from the cumulative number of Covid-19 reported cases from the onset of the outbreak till week 35 of 2021 divided by the population per district or for the region and multiplied by 1000. The incidence for epidemiological week-35 is calculated from the number of new Covid-19 cases reported just for week 35 of 2021 divided by the population per district or for the region and multiplied by 1000. Case fatality is calculated from the cumulative number of Covid-19 related deaths reported from the onset of the outbreak till week 35 of 2021 divided by the population per district or for the region expressed in percentage.

Figures

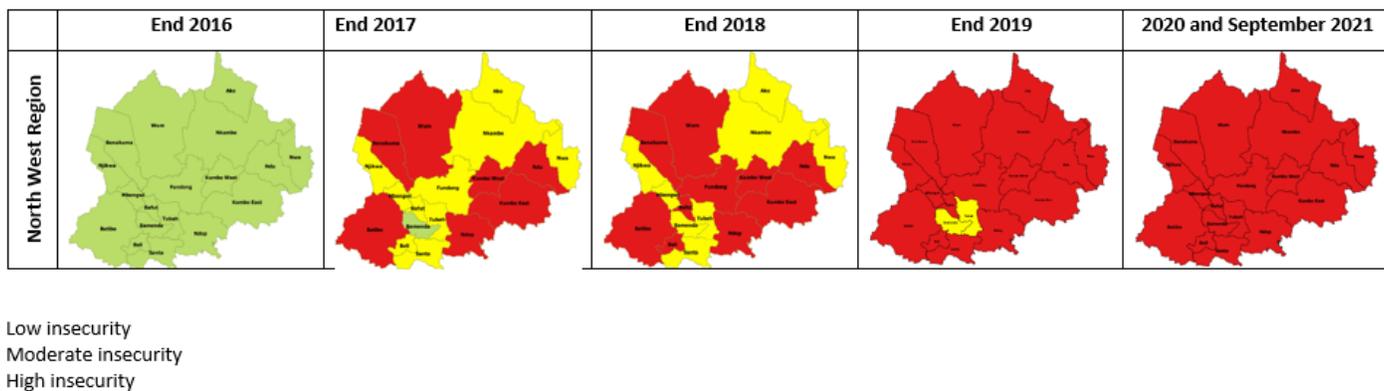


Figure 1

Evolution of the security situation in health districts of North West Region from 2016 to August 2021. A schematic representation of the evolution of the security situation in the northwest region of Cameroon from 2016 to September, 2021. For the corresponding periods, the areas in green are health districts that are not experiencing armed violence during the given year. The zones in yellow are health districts that experienced periodic armed violence associated with some accessibility challenges. Meanwhile, the areas in red are health districts that experienced a full-blown up armed conflict with relative inaccessibility

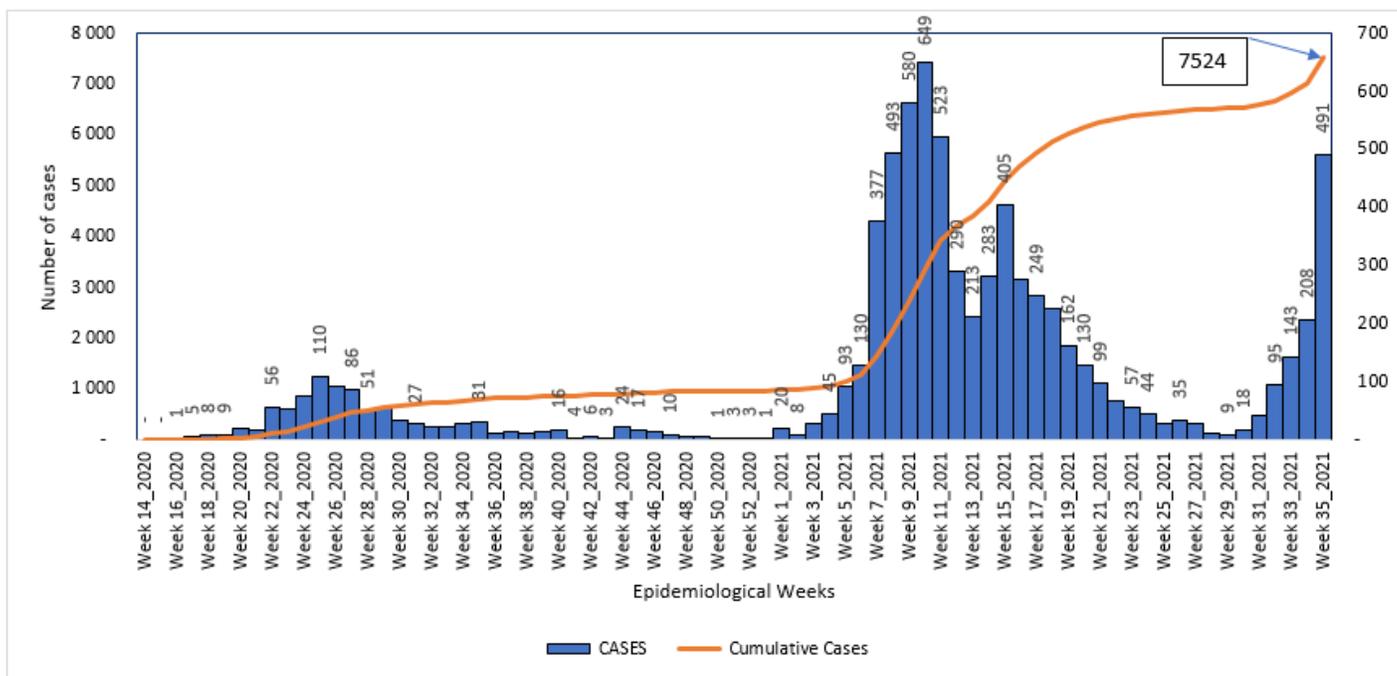


Figure 2

Trend in the Evolution of COVID 19 cases in the North-West region, Cameroon, 2020-2021 This is a representation of the evolution of the number of Covid-19 cases in the NW region from the beginning of epidemiological week 16 of 2020 (12-18 April, 2020) when a case was first recorded till the end of the epidemiological week 35 of 2021 (29 August to 04 September, 2021). Each of the blue bars represents the

number of new cases recorded for the entire seven days of the corresponding week. The orange line on the other hand represents the cumulative number of cases overtime from the onset to the given time under consideration.

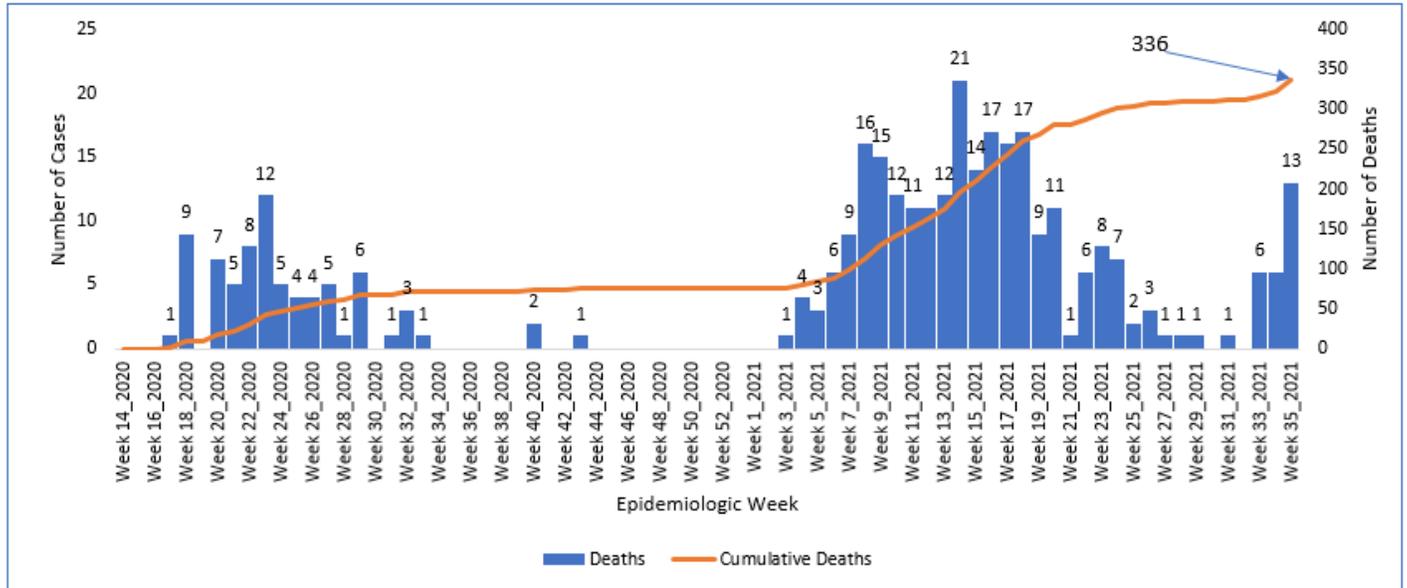


Figure 3

Trend in the Evolution of COVID 19 related deaths in the North-West region, Cameroon, 2020-2021 This is a representation of the evolution of the number of Covid-19 related deaths in the NW region from the beginning of the outbreak in epidemiological week-16 of 2020 (12-18 April, 2021) till the end of week-35, 2021 (29 August to 04 September, 2021). Each of the blue bars represents the number of new Covid-19 related deaths recorded for the entire seven days of that corresponding week. The orange line on the other hand represents the cumulative number of Covid-19 related deaths overtime from the onset to the given time under consideration.

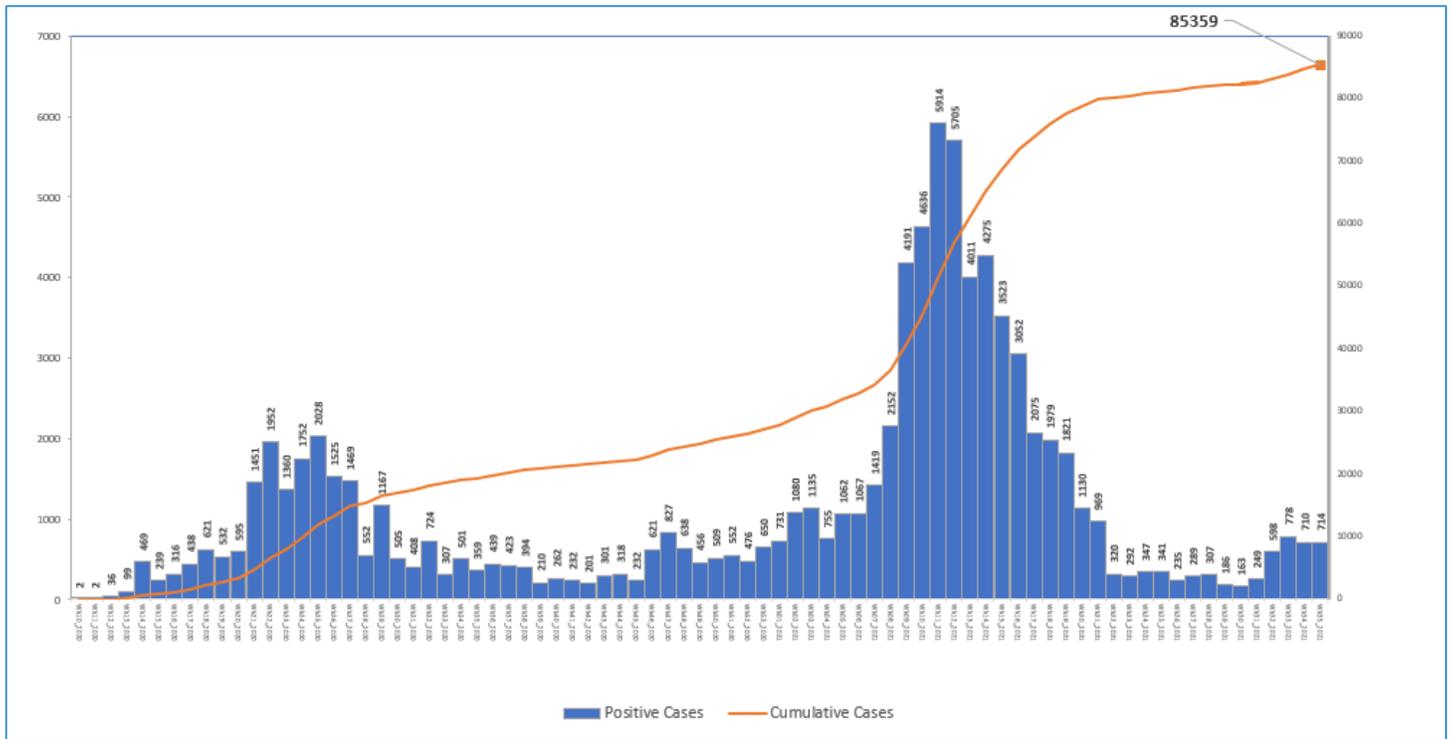


Figure 4

Trend in the Evolution of COVID 19 cases in Cameroon, 2020-2021 This is a representation of the evolution of the number of Covid-19 cases recorded in Cameroon from the beginning of epidemiological week-10 of 2020 (01 to 07 March, 2020) when a case was first recorded in the country till the end of the epidemiological week-35 of 2021 (29 August to 04 September, 2021). Each of the blue bars represents the number of new cases recorded from all the ten regions of the country for the entire seven days of the corresponding week. The orange line on the other hand represents the cumulative number of cases overtime in Cameroon from when the first Covid-19 case was first reported in the country to the given time under consideration.