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Research paper

Impact of the COVID-19 pandemic on pediatricians' clinical activity in Cameroon

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ABSTRACT

Background: The outbreak of COVID-19 has imposed many challenges on health systems. The purpose of this study was to describe the impact of the COVID-19 pandemic on the clinical activity of pediatricians.
Methods: We conducted a cross-sectional and descriptive online survey among pediatricians practicing in Cameroon. Data were collected through an anonymous pre-tested Google Form®.
Results: Among the 118 pediatricians eligible for the survey, 101 responded (85.6%), of whom 61.2% were women. The pediatric outpatient consultations dropped significantly from 60.4% of pediatricians seeing more than 30 patients per week before the pandemic to 9.9% during the pandemic ($P < 0.000$). According to the occupancy rate of hospitalisation beds, 45.5% of pediatricians reported having 76–100% of pediatric hospitalisation beds occupied per week before the pandemic but no pediatrician reported a similar rate during the pandemic ($P < 0.000$). There was a significant increase in the use of telehealth, ranging from no pediatrician using telehealth "very frequently" before the pandemic to 23.8% using it during the pandemic ($P < 0.000$). Most of the pediatricians had at their disposal surgical masks (96%), care gloves (80.2%), hydroalcoholic gel (99.0%), and soap and water (86.1%). For the management of children, 90.1% and 71.3% of pediatricians experienced difficulties accessing COVID-19 PCR and chloroquine, respectively, and 74.3% declared difficulties for proper isolation of patients. More than half (65.3%) of the pediatricians interviewed were "very afraid" or "extremely afraid" of being infected with SARS-Cov-2, respectively 45.5% and 19.8%. The most frequent reasons included fear of infecting their relatives (85.1%) and of developing a severe form of the disease (43.6%). The reluctance to consult health services expressed by the parents was due to: fear of being infected when leaving their home and especially in the health facility (96%), strict compliance with confinement (30.7%), and financial difficulties of families (13.9%).
Conclusion: This work highlights the impact of the coronavirus pandemic on the clinical activity of Cameroonian pediatricians. Since the beginning of the pandemic, there has been a significant drop in the use of health facilities, which probably has a negative impact on children's overall level of health. Although the preventive measures explain this drop in attendance at health facilities, the parents' fear of being infected when leaving the house was the predominant reason likely to explain this drop in attendance at health facilities. This could constitute an axis for developing messages to parents to encourage a gradual return to child health services.

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1. Introduction

In December 2019, an increasing number of cases of pneumonia emerged in Wuhan, a city in central China with a novel coronavirus (2019-nCov) rapidly identified as the causative agent [1–3]. On February 11, 2020, the Coronavirus Study Group of the International Commission on Virus Classification named the new virus "Severe Acute Respiratory Syndrome Coronavirus 2" (SARS-CoV-2) and the World Health Organisation (WHO) named the disease "Coronavirus Disease-2019" (COVID-19). On March 12, 2020, the WHO announced that COVID-19 had reached pandemic status [4].

From the start of this outbreak, as of September 15, 2020, over 29,323,247 confirmed cases have been diagnosed in 188 countries with 929,444 deaths. In Cameroon, the first patient was diagnosed on March 5, 2020, and as of September 15, 2020, there were 20,228 confirmed cases and 415 deaths [5]. On March 17, 2020, as part of the government's response strategy to the COVID-19 pandemic, Cameroon took a series of measures including closing the borders, social distancing, and closing schools and universities [6].

Although children are less likely to be symptomatic or develop severe symptoms compared to adults, the pandemic has brought other issues, such as the missing out on vaccinations due to postponement of campaigns and interruptions in routine immunisation [7–9].

In Cameroon, a significant drop in the number of visits to health facilities was observed with a decrease in consultations and pediatric hospitalisations, among others. The purpose of this survey was to describe the impact of the COVID-19 pandemic on the clinical activity of pediatricians in Cameroon.

2. Methods

From May 17th to 21st, 2020, we conducted a cross-sectional and descriptive online survey among pediatricians practicing in Cameroon. The Cameroonian Pediatric Association (CPA) has a WhatsApp group called "Information SOCAPED" created on 07/11/2019 and comprising of 128 members in May 2020. This group is used by pediatricians for professional discussions and to disseminate various information. A pre-tested and anonymous GoogleForms questionnaire was posted on this WhatsApp group and several daily reminders were sent for 3 days to encourage pediatricians to respond to the form.

Pediatricians in the WhatsApp group, but practicing abroad, pediatric residents, general practitioners, pediatricians without regular clinical activity, and any duplicates, were excluded.

The questionnaire asked about sociodemographic data of the respondents: gender, age, year of start of practice as pediatrician, mode and city of practice. A second section was devoted to the description of daily practice before the pandemic and questioned the number of consultations per week, the number of hospital beds available, as well as their occupancy rate, on the one hand, and the use of telehealth, on the other hand. A third section was dedicated to collecting the information cited above, but this time during the pandemic. The fourth section asked the participants about their treatment approach for suspected and confirmed COVID-19 children. A fifth section was dedicated to the evaluation of the availability of personal protective equipment and devices, as well as their use before and during the pandemic and the last point evaluated the pediatricians' fear of being infected and the main reasons for this fear as well as the main reasons stated by parents for postponing visits to health facilities during the pandemic.

The data were collected via the Excel sheet automatically generated by GoogleForms and exported for analysis in SPSS version 23 software.

3. Results

3.1. Study participants

Among the 128 pediatricians registered in the "Information SOCAPED" WhatsApp group, 118 were eligible to respond to the questionnaire, 10 were excluded for the following reasons: one duplicate, one pediatric resident, two general practitioners, four practicing out of the country, two retired from active practice. Finally, 101 pediatricians responded to the questionnaire giving a response rate of 85.6%. Women were the most represented in the profession with 62 (61.2%) compared to men with 39 (38.6%), giving a sex ratio of 0.6. The mean age of Cameroonian pediatricians was 46.9 ± 9.5 years, while the mean years of practice experience was 11.9 ± 8.7 years. The majority of participants were primary care pediatricians amounting to 60 (59.4%), having a mixed practice both in the hospital and in private practice for 50 (49.5%) of them and located essentially in Yaoundé, 49 (48.5%) and in Douala, 43 (42.6%).

3.2. Practice environment of pediatricians in Cameroon

Regarding the work environment of pediatricians, the majority, that is, 50 (49.5%) reported working in health facilities with more than 30 hospitalisation beds available. The rest of the respondents reported a number of beds varying from 1 to 10 beds, 11 to 20 beds, and 21 to 30 beds in 15.8%, 9%, and of cases 16.8%, respectively. Nine pediatricians (8.9%) did not have any bed for hospitalisation in their health facility (Table 1).

3.3. Impact of the COVID-19 pandemic on the clinical activity of pediatricians in Cameroon

Concerning the pediatric outpatient consultations, 61 pediatricians (60.4%) reported seeing more than 30 patients per week before the COVID-19 pandemic as compared with 10 (9.9%) consulting more than 30 children per week during the 4 weeks preceding the survey ($P < 0.000$). According to the occupancy rate of hospitalisation beds, 46 pediatricians (45.5%) reported having 76–100% of pediatric hospitalisation beds occupied per week before the COVID-19 pandemic. No pediatrician recorded such a

Table 1
Clinical activity of respondents before and during the COVID-19 pandemic.

	Before COVID-19 pandemic		In the past 4 weeks (before May 17, 2020)		*P*
	n	%	*n*	%	
Range of outpatient consultations per pediatrician per week					
1–10 patients	8	7.9	38	37.6	< 0.000[a]
11–20 patients	8	7.9	32	31.7	
21–30 patients	24	23.8	21	20.8	
More than 30 patients	61	60.4	10	9.9	
Range of bed occupancy per week					
1–10%	12	11.9	20	19.8	< 0.000[a]
11–25%	5	5.0	28	27.7	
26–50%	10	9.9	30	29.7	
51–75%	28	27.7	23	22.8	
76–100%	46	45.5	0	0.0	
Use of telehealth					
Very frequently	0	0.0	24	23.8	< 0.000[a]
Frequently	32	31.7	47	46.5	
Rarely	56	55.4	27	26.7	
Never	13	12.9	3	3.0	
Total	101	100.0	101	100.0	

[a] McNemar–Browker test.

high rate during the 4 weeks preceding the survey ($P < 0.000$). Regarding the use of telehealth for consultations and advices, none of the pediatricians reported using telehealth "very frequently" before the COVID-19 pandemic as compared to 24 (23.8%) during the 4 weeks preceding the survey ($P < 0.000$). These remote consultations and advice were usually given through WhatsApp ($n = 52$, 51.5%), normal phone calls ($n = 48$, 47.5%), or through Skype ($n = 1$, 1.0%). These data are summarised in Table 1.

3.4. Attitudes of pediatricians to the care of children during the COVID-19 pandemic

Among the 101 pediatricians surveyed, 10 (9.9%) reported having treated a total of 18 children with a positive COVID-19 PCR test result. Out of these 10 pediatricians, seven took care of the infected children as outpatients and three as inpatients; 2 children died. However, 42 (41.5%) had seen some 161 children suspected of having COVID-19 without confirmation through testing. The presumptive treatment approach for COVID-19-positive children is shown in Table 2.

On April 6, 2020, the Cameroonian Pediatric Association published recommendations for the diagnosis and the management of COVID-19 in newborns and children. Among the pediatricians surveyed, 11 (10.9%) were not aware of these guidelines and only 38 (37.6%) used them in the management of children.

3.5. Protective measures in daily practice

Questioned about the systematic wearing of a mask during consultation, before the pandemic, 99 (98%) responded "no" while during the pandemic, 98 (97%) reported wearing a mask systematically for consultation ($P < 0.000$). Regarding the availability of protective equipment in the consultation room, pediatricians reported having surgical masks, hydroalcoholic gel, and water and soap in 96%, 99%, and 86.1% of cases, respectively (Table 3).

3.6. Difficulties in daily management of children

The most frequent difficulties faced by pediatricians in daily management of children with COVID-19 were: access to COVID-19 PCR testing (90.1%), to chloroquine (71.3%), and difficulties in isolating affected children properly (Table 4).

Table 2
Respondents' presumptive treatment approach for COVID-19-positive children according to the clinical presentation.

Treatment approach	Symptomatic		Asymptomatic	
	n	%	*n*	%
COVID-19 treatment	67	66.3	54	53.5
Symptomatic treatment	59	58.5	28	27.7
Clinical observation	3	3.0	21	20.8

Table 3
Availability of protective equipment in the consultation room.

Items	*n*	%
Surgical masks	97	96
FFP2 or N95	37	36.6
Visor	34	33.7
Overcoat	13	12.9
Overshoes	13	12.9
Gloves	81	80.2
Hydroalcoholic gel	100	99.0
Water and soap	87	86.1

Table 4
Difficulties in accessing items necessary for the management of children.

Items	*n*	%
Access to COVID-19 PCR	91	90.1
Access to CT	66	65.3
Access to chloroquine	72	71.3
Access to azithromycin	9	8.9
Isolation facility	75	74.3
Diagnosis announcement[a]	55	54.5

[a] Announcing the diagnosis of COVID-19 to the parents or caregivers of the children.

3.7. Fear of contamination among pediatricians

Concerning the fear of being contaminated, 46 (45.5%) and 20 (19.8%) respondents declared being "very" and "extremely" afraid, respectively. The main reason for that fear was the risk of contaminating their relatives in 86 (85.1%) cases. The duration of consultation had decreased for 37 (36.6%) pediatricians (Table 5).

3.8. Reluctance to attend consultations as expressed by parents

Among the pediatricians surveyed, 96 (95.0%) faced the reluctance of parents to bring their children for consultation during the COVID-19 pandemic. The most frequent reason claimed by parents to be reluctant for consultation of their children was the fear of being contaminated by going out of the house for 97 (96.0%) of them (Table 6).

4. Discussion

With 118 pediatricians practicing in Cameroon in 2020 for an estimated population of more than 25 million inhabitants, Cameroon has 0.47 pediatricians per 100,000 population. This rate is similar to that of other African countries (0.03–0.8 per

Table 5
Respondents' fear of being infected.

Items	*n*	%
Pediatricians' fear of being infected		
Not afraid at all	1	1.0
Mildly afraid	34	33.7
Very afraid	46	45.5
Extremely afraid	20	19.8
Reasons for fear of being infected		
Age	36	35.6
Comorbidities	26	25.7
Developing a severe form	44	43.6
Contamination of relatives	86	85.1
Death of a relative/colleague	21	20.8
Duration of the consultation		
Increased	9	8.9
Decreased	37	36.6
No change	55	54.5

Table 6
Reasons expressed by parents for reluctance to consult pediatrician.

Reasons	*n*	%
Fear of being contaminated	97	96.0
Strict compliance with confinement	31	30.7
Financial difficulties during the pandemic	12	13.9
Have not faced this issue	4	4.0

100,000 population) but lower than European figures (11–86 pediatricians per 100,000 population in the UK and Germany) [10]. The female predominance in the profession has been reported in other studies [11]. This survey showed that the majority of pediatricians (91.0%) practice in Douala and Yaoundé, resulting in an uneven distribution of pediatric care offered in the rest of the country. Considering pediatric subspecialties, most pediatric specialties are present and almost all are concentrated in the cities of Douala and Yaoundé.

The pediatricians surveyed recorded a significant decrease in their clinical activity both in terms of consultations and hospitalisations during the pandemic. This drop in activity was observed both in public health facilities and in private structures. While the impact of the COVID-19 pandemic has been documented in certain priority health activities such as the decline in the immunisation programs, the decrease in attendance at pediatric consultations has, to the best of our knowledge, not yet been described [12]. This decrease in attendance at health facilities is likely to have a negative impact both on preventive medicine activities, such as immunisations, but also on curative care. Children treated for chronic conditions, for example, could miss follow-up appointments, could experience treatment breaks that may lead to deterioration in their state of health. Another aspect of this drop in attendance could be delayed consultations and late management of childhood illnesses. Finally, in our sociocultural context, there could be a higher risk that parents of sick children more frequently use alternatives, such as advice from pharmacists or, even worse, street drugs, traditional medicine, or prayers, to treat their children.

Regarding the use of telehealth, our survey shows a significant increase in the use of telehealth by the pediatricians during the pandemic. In the developing world and particularly in Africa, the use of telehealth is still sporadic [13]. In Cameroon, very little is known about this healthcare modality [14]. Even in the United States, before the COVID-19 outbreak, many health systems and especially pediatricians had low rates of telehealth utilisation for routine care [15,16]. The COVID-19 pandemic has forced all healthcare systems, hospitals, and clinics to rapidly implement telehealth services [17]. In Cameroon, to the best of our knowledge, active telemedicine networks are scarce. Pediatricians consider telehealth to be a real need, which is simply exacerbated by the restrictive measures imposed by the pandemic. While it is true that there are limits to telehealth, it could be very useful in keeping in touch with patients and families and in continuing to follow up and disseminate prevention messages.

Half of the pediatricians surveyed (53.5%) stated that they would administer a treatment for COVID-19-positive children even if they are asymptomatic. Although there is no scientific evidence to reject the decision to treat an asymptomatic child presenting with a positive COVID-19 PCR result, this decision should take into account several conditions [18]. Firstly, the family context; since children are generally contaminated by an adult relative, parental anxiety can lead to proposing treatment for an asymptomatic child with a positive COVID-19 PCR result. The difficulty in respecting preventive measures and the impossibility of isolating the asymptomatic child within the family or the community may be other arguments in favour of treatment.

Personal protective equipment is an important and sometimes challenging aspect of medical care during the current COVID-19 pandemic. In Cameroon, before the COVID-19 pandemic, 98% of pediatricians did not systematically wear a mask during the clinical examination of children. A total of 98 pediatricians (97%) reported systematically wearing a mask during the consultation since the outbreak of the pandemic in Cameroon. On the other hand, most of the pediatricians interviewed declared that they had at their disposal: surgical masks (96%), care gloves (80.2%), hydroalcoholic gel (99.0%), and soap and water available (86.1%). Other equipment was less available; thus, only 36.6% of pediatricians had N95 masks, 33.7% had a visor, and 12.9% had an overcoat. Difficulties in receiving supplies are the same everywhere. The availability of personal protective equipment is generally low. Very often, practitioners have to use several disposable devices, such as masks beyond the period recommended by the manufacturers or must obtain protective equipment at their own expense when the health facilities are out of stock. Another issue is that the quality of the equipment found on the market in times of high demand may not always be the best. Finally, there is the question of the rational use of the available equipment as recommended by the World Health Organisation [19–21].

Difficulties in accessing diagnosis and treatment modalities is a reality in pediatric daily practice. Thus, 90.1% of the pediatricians interviewed stated that they had difficulty accessing PCR for the diagnosis of COVID-19 in children. This could be explained by the fact that, in the early stage of the pandemic, there was only one approved centre for carrying out the diagnosis of COVID-19 by PCR throughout the country. Subsequently, despite the proliferation of diagnostic centres, these are generally located in Douala and Yaoundé, geographically limiting access to patients living in other regions. In addition, the frequent breakdowns in PCR reagents and the delays in yielding results, which can sometimes be up to several weeks, do not help treatment decisions in the acute phase of the disease. The situation is similar regarding access to computed tomography (CT), as 65.3% of the pediatricians surveyed reported having difficulties in accessing CT scans for their patients. This could be explained by the cost of the examination, which ranges between 100 and 175 USD. From a treatment point of view, the Ministry of Public Health of Cameroon has adopted, in the national treatment protocol, treatment based on chloroquine and azithromycin. These medicines are given free of charge to patients with a positive COVID-19 PCR result. In our survey, 71.3% of pediatricians declared that they had difficulty accessing chloroquine, while 8.9% reported having difficulty accessing azithromycin. The unavailability of chloroquine could be explained in several ways: Firstly, frequent stock-outs and insufficient quantities available to meet demand in treatment centres. On the other hand, since this anti-malarial is no longer used routinely for this indication because of the high resistance rates of the parasite, it has not been available in pharmacies for several years. Finally, 74.3% of pediatricians declared difficulties in ensuring the isolation of patients suspected of having or confirmed as having COVID-19. In fact, in the initial stage of the pandemic, the government strategy was to create centres dedicated to the care of COVID-19 patients. These centres were quickly overwhelmed and finding a place for hospitalisation was difficult. Currently, despite the decentralisation of patient care in other health facilities, there are still problems with space to isolate suspected or confirmed cases. Despite the establishment of the African Task Force for Coronavirus Preparedness and Response (AFTCOR) focusing on six work streams (laboratory diagnosis, surveillance, infection prevention and control in healthcare facilities, clinical treatment of people with severe COVID-19, risk communication, and supply chain management and stockpiles), many of these are still issues in the Cameroonian context [22,23].

More than half of the pediatricians interviewed were very afraid of being infected with SARS-Cov-2 (15.5% were very afraid and 19.8% extremely afraid). The most frequently cited reasons included: fear of infecting their family (85.1%) and fear of developing a severe form of the disease (43.6%). The duration of the consultation had decreased for 36.6% of the pediatricians surveyed, which could question the quality of these consultations. Understanding and addressing sources of stress and anxiety among healthcare professionals during challenging times is a crucial issue

[24,25]. Fear and anxiety are normal reactions even for caregivers, especially when faced with a new and poorly understood disease condition. This fear is all the stronger since the Cameroonian medical community still remembers the death of several health personnel. The other difficulty is the insufficiency of psychological support cells for the caregivers. And finally, the rise in the number of sick staff further increases the workload on healthy people who must continue to operate services.

Considering the reluctance to consult the health services expressed by the parents, the main reasons mentioned were: fear of being infected when leaving their home and especially in the health facility (96%), strict compliance with confinement (30.7%), and financial difficulties of families (13.9%). These reasons help explain the drop in attendance at health facilities, and thus they can help provide solutions. The socio-economic impact of the coronavirus pandemic has yet been established [26].

5. Conclusion

This work highlights the impact of the coronavirus pandemic on the activity of Cameroonian pediatricians. Since the beginning of the pandemic, pediatricians have recorded a very significant drop in the use of health facilities, the respecting of preventive measures (especially strict confinement) being one of the reasons to explain this situation, which probably has a negative impact on the overall health of children. Moreover, the parents' fear of being infected when leaving the house to visit a health facility was the main potential reason explaining this drop in attendance at health facilities and could constitute an axis for developing messages to parents to encourage a gradual return to child health services. The survey also evokes the difficulties linked to personal protective equipment; access to diagnostic and treatment means, as well as the pediatricians' fear *vis-à-vis* the pandemic.

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Disclosure of interest

The authors declare that they have no competing interest.

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