

# The Impact of Covid-19 Pandemic on Child Abuse and Neglect

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## Research Article

**Keywords:** child abuse, neglect, covid-19, SARS-CoV-2, pandemic, disasters

**Posted Date:** March 21st, 2022

**DOI:** <https://doi.org/10.21203/rs.3.rs-1431271/v1>

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# Abstract

**Purpose** - Child abuse and neglect (CAN) is a worldwide issue due to its biological, psychological, and social effects. Research in this field is particularly useful to understand CAN aspects which are still unknown and to define updated intervention strategies. Until now, there are no clear indications about the possible effects determined by the SARS-CoV-2 pandemic on CAN. For these reasons, the authors of the present manuscript propose a study in which they compared quantitative and qualitative variables of pre-pandemic and pandemic cases evaluated at an Italian ambulatory specialized in diagnosis and management of CAN. The main aims were to: define if there was a reduction or an increase of cases referred for CAN during SARS-CoV-2 pandemic; evaluate if there were statistically significant differences of variables' distributions between pre-pandemic and pandemic periods.

**Methods** - The study included children 0 - 18 years of age who were referred to the specialized ambulatory during the first 13 months of the SARS-COV-2 pandemic in Italy: March 2020 - March 2021. As control group (Group B - GB), the authors chose children 0 - 18 years of age evaluated by the healthcare professionals of the same ambulatory from March 2018 to March 2019. Ages and main qualitative variables were compared between the two samples throughout statistical tests.

**Results** - The analysis yielded no statistical differences for age distributions and for the most part of qualitative variables. The study pointed out a reduction of the distribution of the number of cases.

**Conclusions** - In this study, the comparison of frequencies' distribution of the most part of variables between pre and post pandemic samples did not differ. The most important result of the present analysis is that in the pandemic period the volume of observed CAN cases decreased. This allows us to confirm the indications of the scientific literature. We cannot exclude that the decrease was due to a negative impact of the pandemic on the child protection system. The afore-mentioned data will be useful to program corrective interventions, also for future pandemic and disasters.

## What Is Know

- Child abuse and neglect (CAN) is a worldwide issue due to its biological, psychological, and social effects
- More research on CAN is needed to define updated intervention strategies
- In the scientific literature, there are no clear indications about the possible effects determined by the SARS-CoV-2 pandemic on CAN
- Due to the absence of available information in the scientific literature, the only available data about the afore-mentioned effects were based on clinical perceptions of healthcare professionals
- Until now, it is not known if the Covid-19 pandemic caused an increase or a decrease of the number of cases referred for CAN
- It is also not known if the pandemic determined modifications of quantitative and/or qualitative variables between children evaluated in pre-pandemic and pandemic periods

# What Is New

- The present study allowed to point out that during the pandemic there was a significant reduction of the number of cases referred for CAN
- The latter may be caused by a negative impact of SARS-CoV-2 pandemic on the child protection system, especially in case of stay-at-home policies and/or lockdowns
- This analysis highlighted that the most part of variables did not statistically vary between pre-pandemic and pandemic samples

## 1. Introduction

Child abuse and neglect (CAN) is a worldwide issue due to its biological, psychological, and social effects [1–3]. The latter can constitute a significant burden for children, causing negative impacts on their development [1–5]. For these reasons, research in this field is particularly useful to understand CAN aspects which are still unknown and to define updated intervention strategies. The meaningfulness of the latter statements showed itself in the SARS-CoV-2 pandemic. Indeed, during the pandemic the only available data about the possible effect on CAN were based on clinical perceptions of healthcare professionals due to the absence of available information in the scientific literature [6, 7]. For these reasons, recently the scientific community started to report the first data about the possible influence of the pandemic on CAN phenomenon, highlighting meaningful information which can be useful to understand and to identify corrective strategies [6–9]. All organizations which deal with CAN should contribute to fill this gap of knowledge.

In the light of the above, the authors of the present manuscript propose a single-center, retrospective, and observational study in which they compared quantitative and qualitative variables of pre-pandemic and pandemic samples. The main aims were to: define if there was a reduction or an increase of the number of cases referred for CAN during SARS-CoV-2 pandemic; evaluate if there were statistically significant differences of variables' distributions between pre-pandemic and pandemic periods.

## 2. Materials And Methods

This was a single-center, retrospective, and observational study that was conducted at the Turin Pediatric University Hospital (Italy). It was based on the registry of the hospital multidisciplinary (pediatricians, legal medicine specialists, psychologists, psychiatrists, radiologists, specialized pediatric nurses, and social workers) ambulatory which is specialized in diagnosis and management of CAN. The ambulatory evaluates cases in which the suspicion of CAN arises from intra and extra hospital subjects: schools, other hospitals, medical practitioners, law enforcements, prosecutors, parents, social services, foster families, other members of the family, etc. The ambulatory serves two regions of the western-north Italy (Piemonte and Valle d'Aosta). The study was authorized by the competent office of the abovementioned hospital.

## 2.1 Samples And Data Collection

The study included children 0–18 years of age (Group A - GA) who were referred to the specialized ambulatory during the first 13 months of the SARS-COV-2 pandemic in Italy: March 2020 - March 2021. As control group (Group B - GB), the authors chose children 0–18 years of age evaluated by the healthcare professionals of the same ambulatory from March 2018 to March 2019 (13 months; not SARS-COV-2 pandemic period in Italy). The same months were chosen to eliminate possible seasonal variations. For both groups, the authors graphically represented the distribution of the number of cases divided for each month (Fig. 1).

For each case, medical records were revised collecting the following variables in two Excel sheets (for the categories of the variables see Table 1): month and year at referral; age in months; sex; continent of origin; origin of the referral; family status; type of CAN; communication of the events to the prosecutor; suspected perpetrator;  $\geq 24$  hour latency between the trauma and the referral;  $\geq 2$  admissions at emergency department for previous traumas; execution of imaging tests; type, number, and location of lesions; outcome; discharge at; emergency decision to secure the child due to acute and dangerous conducts of her/his caregiver/s.

Table 1  
Summary of frequencies' distributions of the main variables

<b>Sex</b>	<b>Group A</b>	<b>%</b>	<b>Group B</b>	<b>%</b>
<b>Male</b>	41	35.34	96	42.11
<b>Female</b>	75	64.66	132	57.89
<b>Total</b>	116	/	228	/
<b>Unknown</b>	0	/	1	/
Continent of origin	Group A	%	Group B	%
<b>Europe</b>	83	71.55	202	88.6
<b>Africa</b>	19	16.38	15	6.58
<b>Asia</b>	3	2.59	7	3.07
<b>South America</b>	9	7.76	4	1.75
<b>Mixed</b>	2	1.72	0	0
<b>Total</b>	116	/	228	/
<b>Unknown</b>	0	/	1	/
Origin of the referral	Group A	%	Group B	%
<b>Mather</b>	1	0.91	19	8.76
<b>Father</b>	1	0.91	11	5.07
<b>Parents</b>	1	0.91	11	5.07
<b>School</b>	4	3.64	10	4.61
<b>Law enforcements</b>	7	6.36	21	9.68
<b>Social services</b>	8	7.27	20	9.21
<b>Hospital</b>	66	60.00	85	39.17
<b>General Practitioner</b>	12	10.91	20	9.21
<b>Judicial authority</b>	4	3.64	7	3.23
<b>Other</b>	6	5.45	13	5.99
<b>Total</b>	110	/	217	/
<b>Unknown</b>	6	/	12	/
Family status	Group A	%	Group B	%
<b>Not divorced parents</b>	51	48.57	96	43.84

<b>Sex</b>	<b>Group A</b>	<b>%</b>	<b>Group B</b>	<b>%</b>
<b>Divorced parents</b>	46	43.81	103	47.03
<b>Foster family</b>	8	7.62	20	9.13
<b>Total</b>	105	/	219	/
<b>Unknown</b>	11	/	10	/
Type of CAN	Group A	%	Group B	%
<b>Neglect</b>	5	5.05	18	8.29
<b>Physical and Psychological abuse</b>	32	32.32	76	35.02
<b>Sexual abuse</b>	44	44.44	82	37.79
<b>Mixed forms</b>	18	18.18	41	18.89
<b>Total</b>	99	/	217	/
<b>Unknown</b>	17	/	12	/
Communication of the events to the prosecutor	Group A	%	Group B	%
<b>Yes</b>	86	74.14	181	79.04
<b>Not</b>	30	25.86	47	20.52
<b>Total</b>	116	/	229	/
Suspected perpetrator	Group A	%	Group B	%
<b>Intra-family</b>	56	65.12	153	71.50
<b>Extra-family</b>	30	34.88	61	28.50
<b>Total</b>	86	/	214	/
<b>Unknown</b>	30	/	15	/
Latency between the trauma and the referral	Group A	%	Group B	%
<b>≥ 24 hours</b>	83	76.85	181	84.98
<b>&lt; 24 hours</b>	25	23.15	32	15.02
<b>Total</b>	108	/	213	/
<b>Unknown</b>	8	/	16	/
Admissions at emergency department for previous traumas	Group A	%	Group B	%
<b>≥ 2</b>	7	6.42	15	6.76
<b>&lt; 2</b>	102	93.58	207	93.24

<b>Sex</b>	<b>Group A</b>	<b>%</b>	<b>Group B</b>	<b>%</b>
<b>Total</b>	109	/	222	/
<b>Unknown</b>	7	/	7	/
Imaging tests	Group A	%	Group B	%
<b>Executed</b>	29	25	24	10.48
<b>Not executed</b>	87	75	205	89.52
<b>Total</b>	116	/	229	/
Presence of at least one sentinel injury	Group A	%	Group B	%
<b>Yes</b>	18	15.52	44	19.21
<b>Not</b>	98	84.48	185	80.79
<b>Total</b>	116	/	229	/
Outcome	Group A	%	Group B	%
<b>Hospitalized</b>	30	27.03	30	13.27
<b>Discharged</b>	81	72.97	196	86.73
<b>Total</b>	111	/	226	/
<b>Unknown</b>	5	/	3	/
Discharge at	Group A	%	Group B	%
<b>Psychological support</b>	48	55.17	130	66.67
<b>Foster family</b>	3	3.45	10	5.13
<b>Social Service</b>	24	27.59	33	16.92
<b>Community</b>	12	13.79	22	11.28
<b>Total</b>	87	/	195	/
<b>Unknown</b>	29	/	34	/
Emergency decision to secure the child	Group A	%	Group B	%
<b>Yes</b>	9	7.76	24	10.48
<b>Not</b>	107	92.24	205	89.52
<b>Total</b>	116	/	229	/

The authors compared the above mentioned main variables (age in months; sex; continent of origin; origin of the referral; family status; type of CAN; communication of the events to the prosecutor;

suspected perpetrator;  $\geq 24$  hour latency between the trauma and the referral; ;  $\geq 2$  admissions at emergency department for previous traumas; execution of imaging tests; outcome; discharge at; emergency decision to secure the child due to acute and dangerous conducts of her/his caregiver/s) in order to verify if there were similar or different distributions of these variables in the two groups.

In addition, for each group the authors identified the cases characterized by at least one among the following sentinel injuries: presence at the external examination of bruises and/or abrasions in  $\leq 12$  month children, lacerated wounds, incised wounds, stabbed wounds, scalding burns; fractures with high and/or moderate specificity for child abuse; retinal hemorrhages; epidural, subdural, arachnoid, and/or intracerebral hemorrhages; genital and/or perianal bruise, excoriation, laceration, and/or scar; defect in the hymen that extends to the base of the hymen, with no hymenal tissue discernible at that location. Then, they evaluated if there were similar or different distributions of these cases between GA and GB.

## 2.2 Statistical Considerations

For both groups, means and standard deviations of ages (expressed in months) were calculated. In order to figure out if it would be necessary to apply parametric or not-parametric statistical tests, the authors evaluated if the two samples had normal (Gaussian) or skewed distributions. Then, a not-parametric statistic (Mann-Whitney - MW - test) was used to compare the ages of the two groups. The frequencies of main qualitative data of GA and GB were calculated. Then, they were compared through the Chi-square test (when the expected value for each cell was five or higher) or the Fisher's exact test (when the expected value for each cell was under five). For all statistical tests, the significance was set at  $\alpha = .05$ . IBM SPSS Statistic (version 25) software was used.

## 3. Results

GA and GB were respectively characterized by 116 and 229 cases (Fig. 1 shows the number of cases' distributions divided for months). Means and SDs of ages were: GA mean - 95.00 months (SD  $\pm$  57.14); GB mean - 99.49 months (SD  $\pm$  51.34). Both samples had skewed distributions. The comparison (MW test) of GA and GB age distributions yielded a p-value  $> 0.05$  (not statistically significant). The frequencies - divided for GA and GB - of all main variables are shown in Table 1. For GA, at least one sentinel injury was present in 18/116 cases; for GB, in 44/229 cases. Statistical comparisons (Chi-square tests and Fisher tests) of frequencies of the two groups yielded a p-value  $> 0.05$  (not statistically significant) for the following variables: sex; type of CAN; family status; communication of the events to the prosecutor; suspected perpetrator;  $\geq 24$  hour latency between the trauma and the referral;  $\geq 2$  admissions at emergency department for previous traumas; presence of at least one sentinel injury; discharge at; emergency decision to secure the child due to acute and dangerous conducts of her/his caregiver/s.

On the contrary, the p-value was  $\leq 0.05$  (statistically significant) for the following variables: continent of origin; origin of the referral; execution of imaging tests; outcome.

## Discussion

In the scientific literature, natural disasters, periods of economic decline, and emergencies have been associated with an increase of the risk of CAN. In 2021, a meaningful review conducted by Seddighi et al. pointed out that “violence increases after many emergencies compared to the conditions prior to emergencies and disasters. Polyvictimization or exposure to multiple types of abuse like physical violence, neglect, and mistreatment seems more common in disasters” [10].

Until now, there are no clear indications about the possible effects determined by the SARS-CoV-2 pandemic on CAN. It is not known if stay at home policies and/or the closure of the most part of extra-familiar activities could have influenced the CAN phenomenon [6–9, 11].

In this study, four variables differed between pandemic and pre-pandemic samples: country of origin; origin of the referral; imaging; outcome (Table 1). The first variable was characterized by a significant increase of African and South American children in the pandemic period (GA). The second variable showed the increase of referral from hospitals. The third variable pointed out that a major number of imaging tests were executed during the pandemic. Finally, the number of hospitalizations after the ambulatory evaluation increased (fourth variable). The present study did not allow us to identify the reasons for different distributions of these variables due to its retrospective and observational nature. However, for the second variable the increase of referrals from hospitals could have been determined by the stay-at-home policies and/or the closure of the most part of extra-familiar activities. Due to pandemic restrictions, hospitals were the few accessible extra-familiar places in which CAN cases could have been suspected and, thus, submitted to the specialized ambulatory. Similar considerations can be suggested for the increase in imaging tests’ execution and hospitalization during the SARS-CoV-2 pandemic. The latter could have been influenced by the fact that the most part of children had been referred to the specialized ambulatory by hospitals. Thus, they were already characterized by clinical conditions with mild/high levels of complexity. This could have determined the need of a major number of imaging tests’ execution and of hospitalizations after the specialized ambulatory evaluation.

It is important to note that these hypotheses can be neither confirmed nor excluded throughout the comparison with the scientific literature due to the few available articles about this topic and the differences in study sampling.

Indeed, talking about the execution of imaging tests, in 2022 Henry et al. proposed a meaningful study in which they analyzed “child abuse imaging and findings in the time of COVID-19” [12]. They highlighted “a >20% decrease in skeletal survey performance early in the pandemic” [12]. This result could appear in contrast with our study. Nevertheless, it is important to note that the above-mentioned authors evaluated a sample characterized by children younger than “2 years undergoing skeletal surveys because of concern for physical abuse at a tertiary children's hospital” [12]. Thus, the results of the two manuscripts are hardly comparable.

One of the most important results of this study is that the distributions of the most part of frequencies between pandemic (GA) and pre-pandemic (GB) samples did not differ. Some manuscripts reported that the occurrence of some forms of CAN - especially physical maltreatment - were more common during the SARS-CoV-2 pandemic. In 2021, Sharma et. al stated that their findings “add weight to existing concerns regarding increased rates of child maltreatment under mandatory stay-at-home orders” [13]. The present manuscript pointed out that distributions of CAN diagnoses were not different between the pandemic (GA) and the pre-pandemic (GB) periods. We identified neither a major number of physical maltreatment cases in GA nor an increase or a decrease of other forms of CAN. However, it is important to highlight that Sharma’s study was focused on sentinel injuries evaluated on < 6 months of age children. Thus, also in this case the two studies are hardly comparable [13].

The present study did not identify an increase of intra-familial perpetrators despite the stay-at-home policies could have influenced this outcome. Moreover, in the pandemic period (GA) it was identified neither a major number of cases characterized by the presence of at least one sentinel injury, nor an increase of reporting to the prosecutor. These findings seem to be in contrast with the ones of Massiot et al. who reported: “fewer violence cases were perpetrated outside the family as compared with 2018 and 2019”; “the increase in incidence of severe abuse cases during the lockdown and the next 3 months” [6]. However, despite the similarity of two manuscripts’ samples, in our study we included patients with suspected physical maltreatment above 15 years of age while Massiot et al. excluded them [6]. Moreover, we evaluated a longer period of the pandemic. This is a significant limitation because it does not allow an accurate comparison between the two manuscripts.

The most important result of the present analysis is that in the pandemic period the number of observed cases was significantly lesser than the ones evaluated in the pre-pandemic one: 116 and 229 cases respectively (Fig. 1). This finding is confirmed by many manuscripts which talk about the correlation of CAN and SARS-CoV-2 pandemic, demonstrating that the volume of observed CAN cases decreased during stay-at-home policies and lockdowns [6–9, 11–13]. The present study allows us to confirm this finding because the major decrease in referred cases was detected during March - June 2020 (Fig. 1). These months correspond to the period in which the Italian Government ordered a first lockdown in which school, recreational, and not indispensable activities were forbidden [14]. Substantially, the Government allowed only indispensable working, economic, and healthcare activities. Citizens without a role in them were forced to stay at home [14]. Thus, children could only be at home or, if necessary, they could undergo healthcare evaluations at ambulatories and/or hospitals. Then, due to the reduction of SARS-CoV-2 cases and deaths, the Government imposed a progressive reduction of the above-mentioned policies from the first days of June 2020. Similar considerations can be proposed for the period October, November, December 2020 - January 2021 in which the Italian Government ordered new restrictions [14].

Many authors interpreted the reduction of case referral not as the result of a decrease in CAN phenomenon but as child protection system’ less capability to intercept and/or manage CAN cases during the pandemic. For example, Nguyen pointed out that “the COVID-19 pandemic has led to a precipitous drop in CAN investigations where almost 200,000 children are estimated to have been missed for

prevention services and CAN in a 10-month period” [15]. Garstang et al. reported that “there are approximately 1500 (95% CI 538 to 2192) potentially abused or neglected children in England who remain hidden from services” [16]. Katz et al. stated that “the initial data presented and discussed among the international teams pointed to the way COVID-19 has hampered CPS responses and the protection of children more generally in most jurisdictions” [17]. Our analysis cannot ascertain the specific reasons for CAN cases’ decrease. However, we cannot exclude that also in our geographical area some cases of CAN remained unseen due to the negative impact of pandemic on our child protection system. This seems to be suggested by the fact that the major decrease was precisely registered during the two periods in which stay at home policies were stricter.

We think that, confirming the data available in the scientific literature about the reduction of CAN referrals during pandemic, the present manuscript highlights the need for collecting useful and updated indications on a phenomenon which is still far from clear explanation to identify corrective measures and eventually adjust child protection systems’ activities. This could be useful not only to mitigate the possible negative effects caused by SARS-CoV-2 pandemic on children but also to program corrective interventions for future pandemics and/or disasters. For example, due to the difficulty to evaluate if child protection systems can be negatively influenced by a pandemic, researchers should identify new tools capable of objectifying a potential impairment of the afore-mentioned systems during pandemics and/or disaster with the aim to timely implement corrective measures.

The limitations of the present manuscript are related to its monocentric, retrospective, and observational nature. Thus, our analysis cannot be used to clearly identify and explain the reasons for similar or different distributions of the frequencies between pre-pandemic and pandemic samples. In addition, our results cannot be generalized referring to other populations and other geographical areas. Finally, we cannot exclude that in the pandemic period the distributions of frequencies observed between pre-pandemic and pandemic samples had been strongly affected by the fact that some CAN cases could have not reached and properly activated our child protection system.

## Conclusions

In this study, the comparison of frequencies’ distribution of the most part of variables between pre and post pandemic samples did not differ. The most important result of the present analysis is that in the pandemic period the volume of observed CAN cases decreased. This allows us to confirm the indications of the scientific literature. We cannot exclude that the decrease was due to a negative impact of the pandemic on the child protection system. The afore-mentioned data will be useful to program corrective interventions, also for future pandemic and disasters.

## Abbreviations

in alphabetical order

CAN

child abuse and neglect

GA

group A

GB

group B

MW

Mann-Whitney

SD

standard deviation

## Declarations

**Funding:** The authors did not receive support from any organization for the submitted work.

**Conflicts/Competing/Financial Interests:** The authors have no relevant conflict/competing/financial interests to disclose.

**Availability of data and material:** the dataset of this study is available for editors and reviewers if it is needed.

**Code availability:** in the study IBM SPSS Statistic (version 25) software was used.

### Authors' contributions

All authors contributed to the study conception and design. Material preparation, data collection and analysis were performed by Francesco Lupariello, Giuliana Mattioda, Barbara Lauria, Sonia Aguzzi, Emanuele Castagno, Claudia Bondone, and Giancarlo Di Vella. The first draft of the manuscript was written by Francesco Lupariello and all authors commented on previous versions of the manuscript. All authors read and approved the final manuscript.

**Ethics approval:** this is an observational study. The competent office (Research Ethic Committee) of the University of Turin has confirmed that no ethical approval is required.

**Consent to participate and for publication:** Consent to participate and for publication was obtained from the parents of children included in the study.

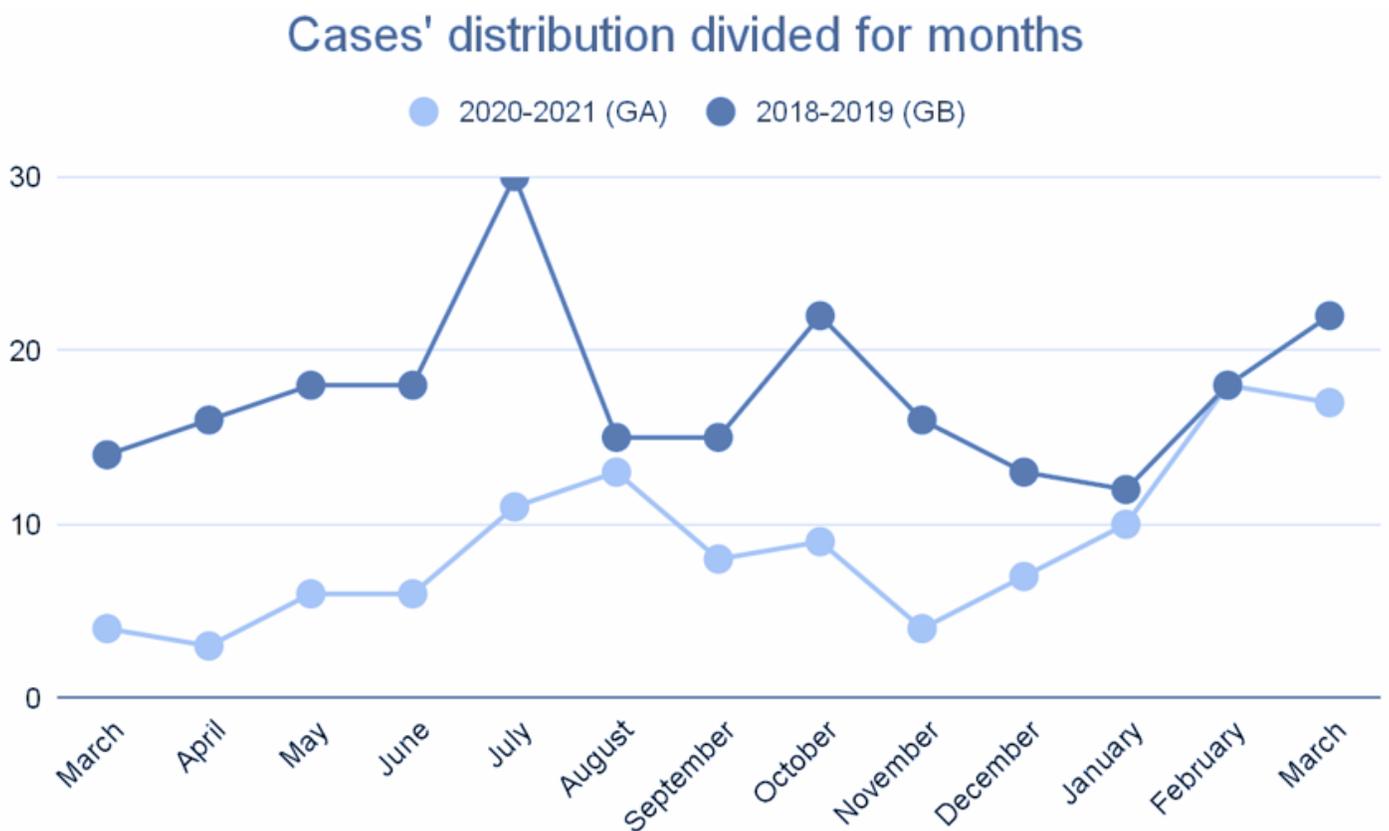
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## Figures



**Figure 1**

Graphical representation of number of cases' distribution for pandemic (GA) and pre-pandemic (GB) samples