Epidemiological dynamics of influenza viruses and SARS-CoV-2 circulation in Burkina Faso in the post-pandemic period of COVID-19

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Abstract

Influenza and COVID-19 remain public health concerns due to their high morbidity, mortality, and epidemic potential. The COVID-19 pandemic notably disrupted health and economic systems worldwide in 2020. Despite reduced global attention, these pathogens continue to circulate, and emerging disease resurgence remains a constant threat, emphasizing the importance of ongoing epidemiological and virological surveillance. This study aimed to describe year-long surveillance of SARS-CoV-2 and influenza viruses in post-pandemic Burkina Faso.

A cross-sectional survey was conducted from January to December 2023 in sentinel surveillance sites across four regions. Patients with influenza-like illness (ILI), severe acute respiratory infection (SARI), and their contacts were recruited. Nasopharyngeal or oropharyngeal swabs were collected and tested for influenza and SARS-CoV-2 using real-time RT-PCR. Socio-demographic and clinical data were obtained from medical records or interviews.

Among 3,311 samples analyzed, 11.41% tested positive for influenza viruses and 6.07% for SARS-CoV-2. Influenza A virus was predominant, accounting for 90.21% of cases. Two influenza peaks were observed: in February–March and October.

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Children were the most affected by influenza, whereas COVID-19 mainly affected adolescents and adults.
Influenza and SARS-CoV-2 were significantly present in ILI and SARI cases. Targeted vaccination for high-risk groups and during peak influenza seasons could enhance prevention and reduce disease burden.

Keywords: Influenza A/B, SARS-CoV-2; Surveillance; Post-pandemic; Burkina Faso, RT-PCR, COVID-1

Dynamiques épidémiologiques de la circulation des virus grippaux et du SRAS-CoV-2 au Burkina Faso dans la période postpandémique de la COVID-19

Résumé

La grippe et la COVID-19 demeurent des préoccupations de santé publique en raison de leur forte morbidité et mortalité. Bien que la pandémie de COVID-19 soit terminée, la circulation continue des virus grippaux et du SRAS-CoV-2 et leurs résurgences restent une menace constante, ce qui souligne l'importance d'une surveillance épidémiologique et virologique continue. Cette étude visait à décrire la surveillance combinée du SRAS-CoV-2 et des virus grippaux au Burkina Faso sur une année postpandémique.

Une enquête transversale été menée de janvier à décembre 2023 dans des sites de surveillance sentinelle de quatre régions. Des patients atteints d'un syndrome grippal (SG), d'une infection respiratoire aiguë sévère (IRAS) ont été recrutés. Des échantillons nasopharyngés ou oropharyngés ont été prélevés et analysés pour la détection simultanée des virus grippaux et du SRAS-CoV-2 à l'aide de la RT-PCR en temps réel. Les données sociodémographiques et cliniques des patients ont été recueillies à partir de leurs dossiers médicaux.

Sur 3311 échantillons analysés, 11,41 % étaient positifs aux virus de la grippe et 6,07 % au SRAS-CoV-2. Le virus grippal A était prédominant avec 90,21% des cas. Deux pics de la grippe ont été observés : en février-mars et en octobre. Les enfants étaient les plus affectés par la grippe, tandis que la COVID-19 concernait davantage les adolescents et les adultes.

Une vaccination ciblée, adaptée aux groupes à risque et aux périodes de forte transmission, pourrait améliorer la prévention.

Mots clés : Influenza A/B, SARS-CoV-2; Surveillance ; Postpandémique ; Burkina Faso, RT-PCR, COVID-19

Background

The emergence of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), the causative agent of coronavirus disease (COVID-19), profoundly altered the epidemiological dynamics of respiratory infections worldwide (1). This shift is largely attributed to the implementation of non-pharmaceutical interventions (NPIs) such as social distancing, travel restrictions, school closures, hand hygiene, and mask-wearing to curb viral transmission (1–3). These measures had a significant impact on the circulation of other respiratory viruses, particularly influenza (4).

Influenza is one of the major causes of morbidity and mortality worldwide(5). It causes around a billion cases, including 3 to 5 million severe cases, resulting in 290,000 to 650,000 deaths a year (5,6).

During the COVID-19 pandemic, historically low levels of influenza circulation were noted in high-income countries, compared with the pre-pandemic period (7,8). A similar trend was observed in developing countries, including Senegal, a West African country with a comparable pre-pandemic influenza profile, where influenza circulation remained exceptionally low during the COVID-19 pandemic (8).

In Burkina Faso, variable prevalences of influenza were observed from one study to another and from one period to another during the pre-pandemic period. It was 6.6% among outpatients with influenza-like illness (ILI) between 2010 and 2012 (9), 15.1% among patients with ILI and 6.6% of cases of severe acute respiratory infection (SARS) between 2014 and 2015 (10), and 14.8% among patients with ILI(11). However, no studies have assessed influenza virus trends in Burkina Faso during the COVID-19 pandemic, creating a gap in epidemiological data for the country.

The decline in influenza circulation during the pandemic has raised concerns about a phenomenon known as "immunological debt", which suggests that reduced viral exposure may have weakened population-wide immunity, potentially increasing susceptibility to future outbreaks (12). This could contribute to the resurgence of influenza viruses, leading to a higher risk of severe epidemics in the post-pandemic period (12).

To better understand the re-emergence of respiratory infections (13,14) including influenza and SARS-CoV-2, in the post-COVID-19 period, the National Influenza and other respiratory diseases Reference Laboratory of Burkina Faso (NIRL), which conducts integrated surveillance of influenza and COVID-19, initiated this study. The objective of this study was to describe the circulation patterns of SARS-CoV-2 and influenza viruses in Burkina Faso and to assess the potential impact of the COVID-19 pandemic on their epidemiology in the post-pandemic period.

I. Materials and methods

Study design

This was a cross-sectional study implemented by the national reference laboratory for influenza and other respiratory pathologies. Study data were collected prospectively over a one-year period, from January to December 2023.

Surveillance sites

Data were collected in four health regions, in the medical clinics of referral hospitals in the Hauts-Bassins, Centre, Plateau-central and Nord regions of the country. Sites were selected on the basis of the following criteria: geographical representation within the country; high number of patients visiting the health facilities; accessibility of the site; availability and willingness of medical staff to participate voluntarily in the surveillance program; and availability of a refrigerator (+4°C) for specimen storage.

Study participants and sample size

Selection of suspected cases of Influenza-like illness (history of fever or measured temperature $\geq$ 38°C and cough, onset within the last ten days) and Severe acute respiratory infection (history of fever or measured temperature $\geq$38°C and cough and/or sore throat, within the last ten days and requiring hospitalization) in sentinel sites was based on WHO/CDC case definitions and national influenza and SARS-CoV-2 surveillance(15). The sample size was calculated based on an estimated SARS-CoV-2 prevalence of approximately 10% in Burkina Faso [16], using Cochran's formula : $N = Z^2P(1-P)/I^2$, where N is the sample size, Z the z-score for a 95% confidence level (1.96), P the expected prevalence, I the margin of error, set at 2.5%, and allowing for a 10% of unexploitable data. The minimal sample size was set at 610 participants. All suspected cases of influenza-like illness or severe acute respiratory infection who consented to participate were systematically included throughout the study period.

Variables

Variables collected included the patient's sociodemographic characteristics (gender, age, place of residence, health region of origin), medical history (presence of chronic diseases such as diabetes, asthma, obesity, other relevant medical conditions), vaccination history (influenza and COVID-19 vaccinations), previous antibiotic intake during the current condition but prior to hospital admission. Information collected also included characteristics of nasopharyngeal and oropharyngeal swabs taken, date of collection, type of acute respiratory infection (ILI or SARI) and PCR test results. In addition, patient age was classified into groups of 0-5 years, 5-17 years, 18-55 years and 55 years and over.

Data, samples and collection

Procedures : Health workers at each sentinel site extracted data from patients' medical records using standardized data extraction forms. Information not available in the medical record was collected from the participants' health diaries or by direct interview with the patient or his/her legal representative. The sample was then taken by nasopharyngeal or oropharyngeal swab and transported to the National Reference Laboratory for Influenza and Other Respiratory Diseases by the Burkina Faso Post, in accordance with category B standards for the transport of samples(16).

RNA extraction and PCR

At the national reference laboratory for influenza and other respiratory diseases, each sample was divided into three aliquots in 1.8 ml cryotubes. Two aliquots were immediately stored at -80°C. As PCR analyses are carried out twice weekly at the National Reference Laboratory for Influenza and Other Respiratory Diseases, the third aliquot was stored at +4°C and analyzed mid- or end-week by real-time RT-PCR using Quant Studio5 thermal cyclers (Applied Biosystems, Foster City, CA, USA). Viral nucleic acids were extracted using Andis 3DMed's automatic viral RNA extraction and purification kits according to its protocol. The Influenza SARS-CoV-2 multiplex kit was used for the detection of influenza A, influenza B and SARS-CoV-2, following its protocol. All influenza A- and influenza B-positive samples were subtyped using primers and probes from the CDC Influenza Virus Real-Time RT-PCR Panel, in accordance with the CDC Atlanta protocol for the detection of influenza A (H1N1pdm09) and seasonal influenza (H3N2) subtypes, and influenza B (B Victoria and B Yamagata)(15).

Statistical analysis

Data were entered into Excel and transferred to R statistical software (R Core Team, 2021), RStudio (Rstudio Team, 2023) for storage and analysis using the "Tydiverse" software package(17) . A univariate logistic regression analysis was performed to estimate the crude odds ratio, followed by a multivariate analysis including the variable with a $p < 0.20$ in the univariate analysis. For interpretation of the results, the significance level was set at 5%. All p-values below 0.05 were considered statistically significant.

Ethical statement

The data analyzed in this study were obtained from the surveillance services of the Ministry of Health of Burkina Faso, as part of the national surveillance program for severe acute respiratory infections (SARI), defined as a public health program under Law No. 23/94/ADP on the Public Health Code and Decree No. 2023-83/MSHP/CAB/PM/MSHP on the organization and responsibilities of disease surveillance services(18). In accordance with national regulations, this study did not require formal approval from the Health Research Ethics Committee of Burkina Faso.

However, all procedures adhered strictly to the ethical principles outlined in the Declaration of Helsinki(19) . Informed consent was obtained from all participants prior to sample collection, including verbal consent from parents and/or legal guardians for participating children. Healthcare workers (physicians and nurses) at sentinel sites received specific training in respiratory symptom screening, as well as in sample collection, storage, and transportation procedures.

The findings from this surveillance provide valuable information to national public health authorities, supporting evidence-based decision-making to improve preparedness and response to respiratory virus epidemics in the country.

II. Results

Socio-demographic characteristics of the study population

During the study period, a total of 3311 cases were collected, including 68.4% (2266/3311) of influenza-like illness and 31.6% (1045/3311) of severe acute respiratory infection. More than half the participants were male (53.9%), and the vast majority were recruited in the Hauts-Bassins region in the west of the country with 72.8% (2410/3311) and in the central region of the capital with 23.9% (790/3311) (table I). The median age was one (01) year (interquartile range 0.0 to 7 years), and nearly four out of five participants were children under five (05) years of age (table 1). Vaccination rates were low, at 1.4% (48/3311) and 0.3% (10/3311) for COVID-19 and influenza respectively (Table I).

Table I: Demographic and medical characteristics of study participants

Characteristics	**SARI**		**ILI**		**Total**	
	n	**%**	**N**	**%**	**n**	**%**
Sex						
Female	439	13.3	1082	32.7	1521	46.0
Male	603	18.3	1180	35.7	1783	53.9
Missing*	3	-	4	-	7	
Health region						
Central region	361	11.5	409	12.4	790	23.9
Central-North region	60	1.8	0	0.0	60	1.8
Hauts-Bassins region	551	16.7	1857	56.1	2410	72.8
Plateau Central region	51	1.5	0	0.0	51	1.5
Age group (years)						
0-4	730	22.9	1754	55.1	2484	78.0
5-17	115	3.6	174	5.5	289	9.1
18-54	107	3.4	217	6.8	324	10.2
55 +	51	1.6	35	1.1	86	2.7
Missing *	42	-	86	-	128	-
Area of residency						
Urban	844	25.5	2259	68.2	3103	93.7
Rural	201	6.1	7	0.2	208	6.3

Mode of catchment						
Routine surveillance	868	26.2	2170	65.5	3038	91.8
Active search	177	5.3	96	2.9	273	8.2
COVID-19 vaccine						
No	1019	30.8	2244	67.8	3263	98.6
Yes	26	0.8	22	0.7	48	1.4
Influenza vaccine						
No	1042	31.5	2259	68.2	3301	99.7
Yes	3	0.1	7	0.2	10	0.3
Antibiotic prior to admission						
No	489	14.8	2259	68.2	2748	83.0
Yes	556	16.8	7	0.2	563	17.0
Medical history of Asthma						
No	1020	30.8	2255	68.1	3275	98.9
Yes	25	0.8	11	0.3	36	1.1
Medical history diabetes						
No	1035	31.3	2264	68.4	3299	99.6
Yes	10	0.3	2	0.1	12	0.4
Medical history of obesity						
No	1036	31.3	2265	68.4	3301	99.7
Yes	9	0.3	1	0.0	10	0.3

***Missing values have not been taken into account in the calculation of proportions; n: number of cases and % percentages of number of cases.**

Prevalence distribution of influenza and SARS-CoV-2 viruses in the post-pandemic period

Of the 3311 people diagnosed with influenza and COVID-19, 17.2% (570/3311) were infected. Figure 1 shows the distribution of infection prevalence by region. It ranged from 17.7% in the Central region to 5% in the Centre-Nord region, but the variation observed was not statistically significant (p=0.38) (Figure 1). The mean prevalence of COVID-19 and influenza was observed according to the health region in which participants were enrolled (Figure 2). Prevalence was not statically significant according to health region for COVID-19 (p=0.54) and also for influenza (p=0.53 (Fig.2).

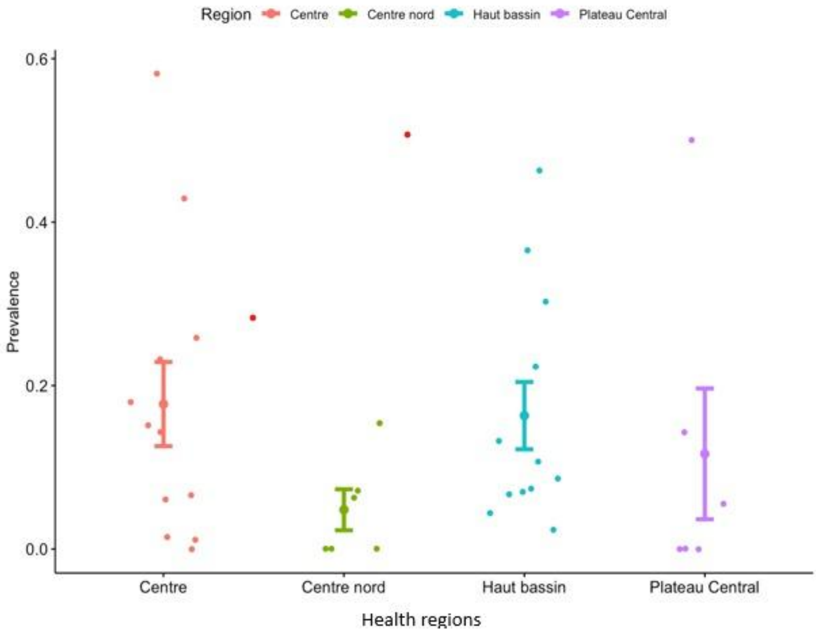
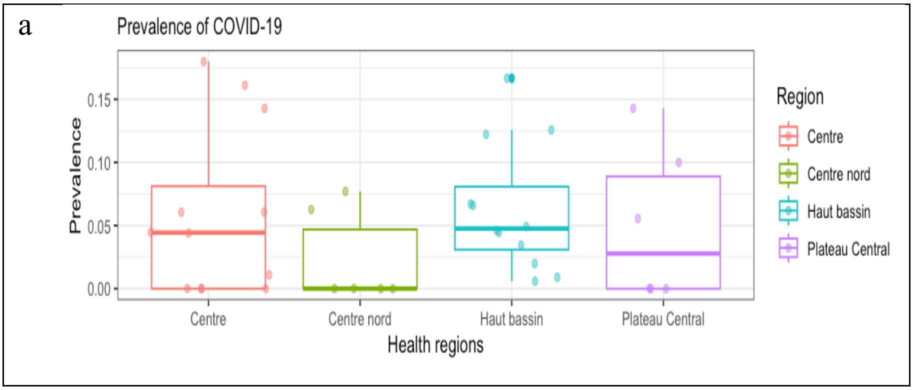


Figure 1: Proportion of infections (SARS-CoV-2 or Influenza viruses) according to health regions.



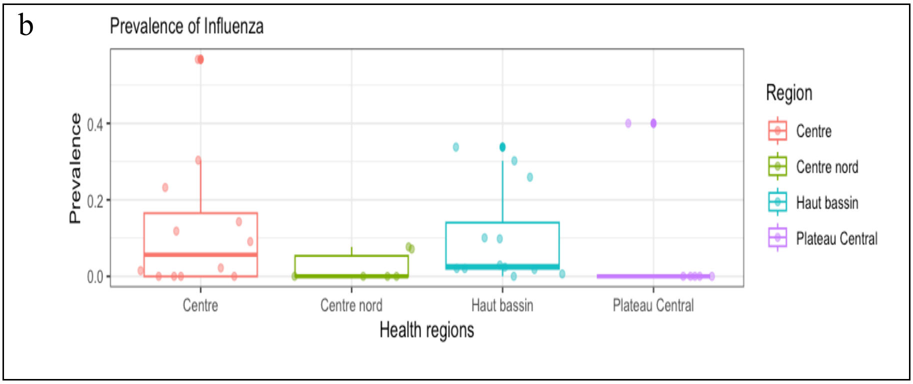


Figure 2: Proportion of study population infected with influenzaviruses and SARS-CoV-2 according to health regions in Burkina Faso. a) COVID-19, b) Influenza

The majority of pathogens were detected among cases of influenza-like illness, with 4.1% for SARS-CoV-2, 3.9% for influenza A(H1N1) pdm09 and 3.75% for influenza A(H3N2). Type B influenza virus was less frequent, with a prevalence of less than 1% in the study population (Table II). Nine co-infections were identified, exclusively involving SARS-CoV-2 and influenza A, including six co-infections between SARS-CoV-2 and influenza A (H1N1) pdm09 and three between SARS-CoV-2 and influenza A (H3N2) (table II).

Table II: Proportions of detected pathogens among SARI and ILI cases in Burkina Faso 2023

Detected pathogens	SARI; n (%)	ILI; n (%)	Total; n (%)
SARS-COV-2	55 (1.66)	137 (4.14)	192 (5.80)
FluA(H1N1)pdm09	48 (1.45)	129 (3.90)	177 (5.35)
FluA(H3N2)	31 (0.94)	124 (3.75)	155 (4.69)
FluB Victoria	10 (0.30)	27 (0.82)	37 (1.12)
FluB Yamagata	0 (0.0)	0 (0.0)	0 (0.0)
FluA(H3N2)/SARS-CoV-2)	0 (0.0)	3 (0.9)	3 (0.9)
FluA(H1N1)pdm09/SARS-CoV-2	0 (0.0)	6 (0.18)	6 (0.18)
No pathogen detected	901(27.21)	1840 (55.57)	2741 (82.78)
Total	1045 (31.56)	2266 (68.44)	3311 (100)

Abbreviation: **SARI**: Severe acute respiratory infection, **ILI**: influenza like illness

Variation in prevalence according to sociodemographic characteristics and risk factors

The results revealed that patients with influenza-like illness had a significantly higher prevalence of influenza virus (adjusted OR = 1.70, p < 0.001). Analysis of the population recruited by age group also showed that prevalence in children aged 5 to 17 was significantly higher than in those aged 0 to 4 (adjusted OR = 2.76, p < 0.001). Similarly, adults (aged 18-55) also had a higher prevalence (adjusted OR = 1.47, p < 0.001) of influenza virus. In contrast, for SARS-CoV-2 infection, adults (aged 18-55) had a significantly higher prevalence (aOR = 1.78, p=0.002), but a lower prevalence was observed in children aged 5-17 (aOR = 0.51, p=p<0.002) (Table III).

Table III: Prevalence according to socio-demographic characteristics and risk factors

Characteristics	N tested	% of case	OR (95%CI)	p-value	aOR (95%CI)	p-value
All						
Clinical aspect						
SARI	1045	13.9	Ref	**0.001**	Ref	0.001
ILI	2266	18.8	1.43 [1.17 – 1.76]	-	1.5 [1.22 – 1.87]	
Age group	2483					
0-4	289	15.7	Ref	<	Ref	<0.001
5_17	324	25.3	1.82 [1.36 – 2.41]	**0.001**	1.88[1.40– 2.51]	
18-55	86	23.5	1.65 [1.24 – 2.17]		1.66[1.24- 2.19]	
55 & plus		11.6	0.71 [0.34 – 1.32]		0.80[0.38-1.48]	
Sex						
Female	1521	18.2	Ref	0.15	Ref	0.26
Male	1782	16.3	0.88 [0.73 – 1.06]		0.90[0.75 -1.08]	
COVID-19						
Clinical aspect						
SARI	1045	5.6	Ref	0.24	Ref	0.25
ILI	2266	6.4	1.2 [0.88 – 1.67]	-	1.20 [0.87 – 1.68]	
Age group						
0-4	2483	6.0	Ref	0.002	Ref	0.002
5_17	289	3.1	0.50 [0.23 – 0.94]		0.51[0.24-0.97]	
18-55	324	10.25	1.78 [1.18 – 2.61]		1.78[1.18– 2.62]	
55 & plus	86	3.5	0.56 [0.13 – 1.53]		0.60[0.14– 1.62]	
Sex						
Female	1521	6.2	Ref	0.72	Ref	0.80
Male	1782	5.9	0.95 [0.71 – 1.26]		0.96[0.72– 1.29]	
Influenza						

Clinical aspect						
SARI	1045	8.5	Ref	<	Ref	<0.001
ILI	2266	12.8	1.57 [1.28 – 2.05]	**0.001**	1.70[1.31– 2.22]	
Age group						
0-4	2483	9.9	Ref	<	Ref	<0.001
5_17	289	22.5	2.64 [1.93 – 3.57]	**0.001**	2.76[2.76-3.76]	
18-55	324	13.9	1.47 [1.03 – 2.04]		1.47[1.03– 2.06]	
55 & plus	86	8.1	0.81 [0.33 – 1.64]		0.92[0.32– 2.22]	
Sex						
Female	1521	12.3	Ref	0.13	Ref	0.22
Male	1782	10.6	0.85 [0.68 – 1.05]		0.87[0.69– 1.08]	

Temporal trends in influenza and SARS-CoV-2 viruses

Although the number of samples collected each month varied throughout the study period (from 5.7% to 13.0%), several waves of influenza virus circulation were observed (Figure 3). A first wave of influenza virus transmission was observed between January and April 2023, with a peak in March. This wave led to a national survey of influenza cases at all surveillance sites in May 2023. A second wave of influenza was observed between September and November, with a peak in October. SARS-CoV-2 circulated throughout the year, with peaks in February, June and November 2023. We observed a co-circulation of influenza and SARS-CoV-2, with a notable peak in February.

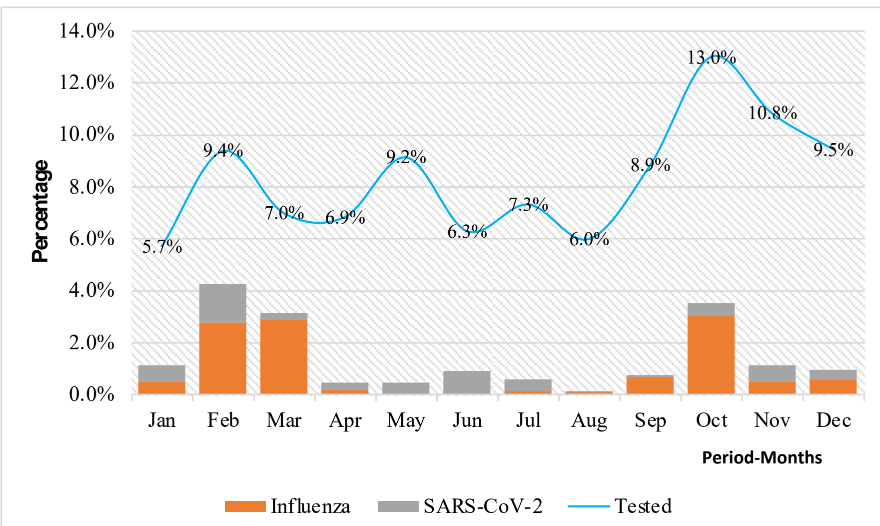


Figure 3: Temporal distribution of acute respiratory infection, and proportion of patients tested positive for influenza or SARS-CoV-2

III. Discussion

Our study reveals the simultaneous circulation of influenza viruses and SARS-CoV-2 during the post-pandemic influenza season in Burkina Faso. Influenza displayed its typical seasonal activity, with peaks in circulation in March and October, while SARS-CoV-2 remained present during these same periods. This observation reflects a persistence of SARS-CoV-2 alongside the established seasonality of influenza, indicating a co-circulatory dynamic rather than synchronised peaks.

The simultaneous presence of both viruses during the influenza season raises important questions about how environmental, behavioural and immunological factors may contribute to their simultaneous circulation. This finding highlights the need to study whether the presence of SARS-CoV-2 influences influenza dynamics, either through competitive inhibition or facilitation.

Although this study focused on the post-pandemic period, we identified a limited number of co-infections involving SARS-CoV-2 and influenza A (H1N1pdm09 and H3N2). In comparison, studies conducted during the pandemic documented lower frequencies of co-infections, often correlated with more severe clinical outcomes(20–22). The slightly higher frequency of co-infections in the post-pandemic period may reflect changes in viral interactions, increased immunity to SARS-CoV-2 or changes in public health measures and healthcare-seeking behaviours, and above all an increase in the number of cases of influenza viruses.

These results suggest a transition in the way these viruses coexist in the population after the pandemic. It is crucial to monitor the evolution of their interactions, as this may affect both transmission dynamics and public health outcomes.

Our results reveal a predominance of influenza A among the influenza cases identified, with all the co-infections observed exclusively involving SARS-CoV-2 and influenza A. These co-infections were split between the H1N1pdm09 and H3N2 subtypes, highlighting their importance in viral circulation.

Influenza virus circulation patterns in Burkina Faso were not affected by the COVID-19 pandemic. This stability highlights the importance of maintaining systematic surveillance systems to monitor the dynamics of these viruses and effectively prevent complications linked to co-infections. In addition, targeted vaccination efforts against SARS-CoV-2 and influenza need to be stepped up, particularly for vulnerable populations. In our study, we observed the circulation of the influenza virus between January and April, as well as between July and December, with notable peaks in March and October. These results are largely consistent with previous research, while highlighting certain differences.

For example, the study by TARNAGDA et al (2014) reported influenza virus circulation during two distinct periods: November 2010 to March 2011 and July to November 2011, with peaks in January and August (9). Similarly, the study by Sagna et al (2013-2015) identified several periods of circulation, including January to March 2013 (peak in February), July 2013 to March 2014 (peak in February 2014), June to August 2014 (peak in July) and July to November 2015 (peak in October) (11). In addition, Cissé et al. (2021) documented an unusual peak in January 2018 (23) .

Although our results confirm the seasonality of influenza circulation observed in previous studies, we found a peak in March that had not been previously reported. This discrepancy may suggest changes in the dynamic epidemiological data, possibly influenced by the COVID-19 pandemic.

Our study is similar to that of Lampros et al. in Senegal, which revealed an unexpected epidemic peak of influenza A outside the usual period, between May and July. These months had previously been identified as a period of low influenza circulation in Senegal (8). Indeed, before the COVID-19 pandemic, influenza circulated mainly according to a well-established seasonal pattern, with two peaks: one between January and March, and the other between August and October. Similarly, in China, before the COVID-19 pandemic, influenza showed clear seasonal patterns. It generally had a winter epidemic in the northern provinces above 33°N, with a peak in January or February, a single peak from April to June in the southernmost provinces, and a double peak below 27°N in January-February and June-August (20) in the mid-latitude regions, with epidemics in January and February. However, the situation changed in 2023 when influenza A made a resurgence at the end of February, causing more serious epidemics than historical epidemics (20). These atypical epidemics occurred at different times to the pre-pandemic influenza patterns, with a lag of around 2 to 3 months from north to south China. Factors such as the public health measures put in place to control SARS-CoV-2 - containment, masking and social distancing - could have influenced the modes of transmission of influenza viruses. In addition, potential interactions between SARS-CoV-2 and influenza viruses could have played a role in these variations. Therefore, understanding the evolutionary interaction between influenza and SARS-CoV-19 seasonality, particularly in the context of their simultaneous circulation, is of paramount importance for the effectiveness of joint control strategies.

In Burkina Faso, during the pre-pandemic period, previous research has consistently highlighted that children under the age of five are disproportionately affected by influenza infections. For example, the study by Tarnagda et al., (2014) reported that this age group represented 45.17% of the total study population, accounting for 41.4% of influenza cases (9). Similarly, Cissé et al (2021) found that children under five years of age accounted for 79.14% of influenza A and B cases in their research (23).

Our study confirms this trend, showing that children under five accounted for more than two-thirds of the population affected by influenza. These results highlight the vulnerability of young children to influenza infections and the crucial need for targeted public health interventions, such as vaccination campaigns, to reduce the burden of disease in this population.

Furthermore, our results suggest that the COVID-19 pandemic did not significantly disrupt established influenza circulation patterns in Burkina Faso. This stability underlines the importance of ongoing surveillance and research to understand the long-term impact of the pandemic on respiratory virus dynamics, particularly in vulnerable populations such as children under five.

In our study, we observed a prevalence of influenza A cases representing 10.29% of the population studied. Although our results confirm the predominance of influenza A over influenza B, they highlight a relatively lower prevalence compared with previous studies conducted in Burkina Faso. For example, Sagna et al., (2018) reported a prevalence of 58.5%, Sanou et al., (2018) 65.3%, and Cissé et al., (2021) identified 14.0% of cases as influenza A(11,15,23). Disparities in prevalence may be due to several factors. Methodological differences, such as study design, inclusion criteria and sampling techniques, and sample size may partly explain these variations. In addition, regional and temporal dynamics, such as climatic conditions and environmental influences, may have had an impact on the transmission patterns observed in these studies.

Senegal, a West African country like Burkina Faso, has also experienced variations in prevalence from 2019 to 2022(8). although the COVID-19 pandemic does not appear to have significantly altered the circulation patterns of influenza A and B viruses in Burkina Faso, indirect effects, such as public health measures or changes in healthcare-seeking behaviour, could have influenced detection or reporting rates.

Our results highlight the importance of continuous and comparative surveillance to monitor the prevalence and distribution of influenza subtypes over time. These data are essential for understanding the factors behind these variations and for developing effective prevention strategies tailored to the local context.

Conflicts of interest

The authors declare no conflicts of interest.

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Contributions of authors

The study was conceived by ZT; Data were collected by ZT and CS; Data analysis was done by ML and AKI; The manuscript was drafted by CS and GN AC,CA,ML,BWOK,GT, JBO,MS and ZT made important contributions to the final manuscript. All authors read and approved the final manuscript submitted for publication.

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