



Comparing Hospital Admission for Seasonal Influenza and COVID-19 in Pediatric Department

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ABSTRACT

Children play a key role in spreading influenza, but the role of children in the spread of COVID-19 is still a matter of debate. Seasonal influenza viruses infect 5–15% of the human population each year, resulting in 500,000 deaths worldwide. The outbreak of COVID-19 began in December 2019, corresponding to the influenza season. It is important for clinicians. Aimed to: distinguish COVID-19 from other respiratory infections, including influenza. Material and Methods: The study showed that the global number of respiratory influenza-related deaths was between 290 000 and 650 000 per year. The utilized the health databases of the Al Wahda Hospital, Derna Utilizing Healthcare databases, conduct Between November 1, 2022, and February 28, 2023, All individuals with at least one hospital admission record between 2 days before and 10 days after a positive test result for COVID-19 or seasonal influenza. Result: A total of 171 patients aged 1 month to 13 years were enrolled in. The observed findings revealed that December was more prone to seasonal influenza and COVID-19 compared to other months. These findings are in agreement with the many works, who described simultaneous COVID-19 and influenza infections to be severe. It is worth noting that the outbreak of COVID-19 began in December 2019, which corresponds to the influenza season. Conclusion: it is important for clinicians to distinguish COVID-19 from other respiratory infections, including influenza.

1. INTRODUCTION

As of April 2, 2020, the coronavirus disease 2019 (COVID-19) pandemic has resulted in >890,000 cases and >45,000 deaths worldwide, including 239,279 cases and 5,443 deaths in the United States (World Health Organization, 2020). Seasonal influenza viruses infect 5–15% of the human population each year, resulting in ~500,000 deaths worldwide (Stöhr, 2002). Before this COVID - 19 pandemic, the evidence on the impact of non-pharmaceutical interventions on common respiratory diseases was vague. According to a Cochrane review, the effects of wearing facial masks were controversial (Jefferson et al., 2023). Data from China suggest that pediatric COVID-19 cases might be less severe than cases in adults and that children might experience different symptoms than do adults (Lu et al., 2020).

Most children had a non-severe type of COVID-19 and children with severe type had higher levels of D-dimer, hypoxia, shock and mechanical ventilation (Saleh et al., 2021), Children play a key role in spreading influenza, but the role of children in the spread of COVID - 19 is still a matter of debate(Pung et al.,2021; Cauchemez et al.,2008). Previous reports have described the simultaneous COVID - 19 and influenza infections to be severe (Hashemi et al.,2021), The outbreak of COVID-19 began in December 2019, corresponding to the influenza season. It is important for clinicians to distinguish COVID-19 from other respiratory infections, including influenza. One study showed that the global number of respiratory influenza-related deaths was between 290 000 and 650 000 per year (Iuliano et al., 2018), The annual recurrence of seasonal epidemics is attributed to the continued evolution of seasonal influenza viruses, which enables them to escape the immunity that is induced by prior infections or vaccination, and to the ability of those viruses to be transmitted efficiently from human to human via respiratory droplets, direct contact and fomites.(Zambon, 1999). In this study, we utilized the healthcare databases of Al Wahda Hospital in Derna to conduct a comparative analysis of patients admitted to the hospital with COVID-19 and seasonal influenza between November 1, 2022, and February 28, 2023. This approach provides a comparative assessment between COVID-19 and seasonal influenza, which may coincide spatiotemporally with some waves of seasonal influenza

2. METHOD

The utilized the health databases of Al Wahda Hospital, Derna, to conduct our study. Between November 1, 2022, and February 28, 2023, we enrolled all individuals with at least one hospital admission record between 2 days before and 10 days after a positive test result for COVID-19 or seasonal influenza. A total of 171 patients aged 1 month to 13 years were enrolled in the study.

Results were expressed as means \pm standard error (SE). Statistical significance was calculated using one-way analysis of variance (ANOVA) followed by post hoc tests for multiple comparisons. All statistical analyses were carried out using SPSS 17 software. Differences were considered significant at $P \leq 0.05$.

3. RESULT

A total of 114 children were admitted to hospital with seasonal influenza. Patients included 81 Male (71%) and 33 (29.0%) Female.aged 1–158 months (mean, 17.54 ± 1.96 months) between November1, 2022, and February 28, 2023(Table.1) and (Figs.1).

57(33%) were admitted with covid-19, 41 Male (72%) and 16 (28.0%) Female. Aged 1–84 month (mean, 15.07 ± 1.64 months) (Table.1) and (Figs.2).

Table 2 shows the patients' age categories, which are 1-6, 7-12, 13-18, and over eighteen months. Approximately 62% of the influenza patients were aged 13-18 months, 26% were aged 1-6, 4% were aged 7-12, and 8% were over eighteen months old. Among the 57 COVID-19 patients, approximately 60% were aged 13-18 months, 30% were aged 1-6, 3% were aged 7-12, and 7% were over eighteen months old.

December was more prone to seasonal influenza and COVID-19 compared to other months ($P < 0.05$), while November had a lower prevalence of seasonal influenza compared to other months ($P < 0.05$) (Figs. 3 and 4).

4. DISCUSSION

A total of 114 children was admitted to the hospital with seasonal influenza. Patients included 81 males (71%) and 33 females (29%), aged 1–158 months (mean, 17.54 ± 1.96 months) between November 1, 2022, and February 28, 2023.

The present findings are in agreement with the work of Jefferson et al. (2008), who detected children with seasonal influenza aged under 2 years. Since the publication of the Cochrane review, a case-control study conducted in the United States during each influenza season from 1999-2000 to 2006-2007 reported an 86% prevalence in children aged 6-59 months (Joshi et al., 2009).

Out of the total 171 children admitted to the hospital, 57 (33%) were admitted with COVID-19, including 41 males (72%). And 16 females (28%), aged 1-84 months (mean, 15.07 ± 1.64 months). Similar findings were reported by Bialek (2020), who detected COVID-19 cases in younger children, with 398 (15%) cases in children aged under 1 year, 291 (11%) cases in children aged 1-4 years, and 388 (15%) cases in children aged 5-9 years. Among 2,490 pediatric COVID-19 cases for which sex was known, 1,408 (57%) occurred in males. Among cases in adults aged 18 years and above for which sex was known, 53% (75,450 of 143,414) were in males.

Similar prevalence was reported in a large population-based cohort in the United Kingdom, which found 12/265 (5%) positive neonates born to SARS-CoV-2 infected mothers (Knight et al., 2020).

In a Spanish cohort, perinatal acquisition occurred in 5/72 (6.9%) of exposed newborns born to SARS-CoV-2-positive mothers, with no difference found between vaginal and Cesarean births (Martínez-Pérez et al., 2020).

In contrast, data from the National Registry for Surveillance and Epidemiology of Perinatal COVID-19 Infection (NPC-19) found 44/2287 (1.9%) of viral tests to be positive in neonates born to mothers with confirmed SARS-CoV-2 infection (American Academy of Pediatrics, 2020)

Previous reports have described simultaneous COVID-19 and influenza infections to be severe (Hashemi et al., 2021).

Hoang et al. (2020) reported that fever (59.1%) and cough (55.9%) were the prominent manifestations, rhinorrhea and nasal congestion in 20%, fatigue in 18.7%, sore throat in 18.2%, diarrhea in 11.7% and headache in 4.3% of affected children.

Alloway et al. (2020) reported necrotizing pancreatitis abdominal ultrasound and CT in 7-year-old girl 2 weeks prior to her diagnosis with COVID-19 infection, she was presented with anorexia, abdominal pain, fever and elevated serum lipase 1672 U/L with family history exposure. Data indicate low rates of perinatal acquisition among neonates born to mothers positive for SARS-CoV-2. In a review of 27 studies, including data from the United States, China, Italy, Sweden, South Korea, and Honduras, only 4 out of 137 neonates (3%) born to SARS-CoV-2 infected mothers had positive viral PCR testing, and 3 neonates had equivocal testing (5% total prevalence including equivocal tests) (Shalish et al., 2020)

The observed findings revealed that December was more prone to seasonal influenza and COVID-19 compared to other months. These findings are in agreement with the work of Hashemi et al. (2021), who described simultaneous COVID-19 and influenza infections to be severe. It is worth noting that the outbreak of COVID-19 began in December 2019, which corresponds to the influenza season. Therefore, it is important for clinicians to distinguish COVID-19 from other respiratory infections, including influenza. One study showed that the global number of respiratory influenza-related deaths was between 290,000 and 650,000 per year (Iuliano et al., 2018).

Winter epidemics in temperate regions and rainy season epidemics in the tropics could also be linked to changes in human behaviour, for example, by increases in time spent indoors. Host mixing in confined spaces can have an important role in viral transmission, as evidenced by summertime outbreaks of influenza virus in elderly care homes and prisons and by the effect of school closures on limiting viral transmission. Additionally, seasonal fluctuations in human immunity, particularly during the winter months in which pro-inflammatory responses are up-regulated, could also have a role in the seasonality of influenza epidemics (Dopico et al., 2015)

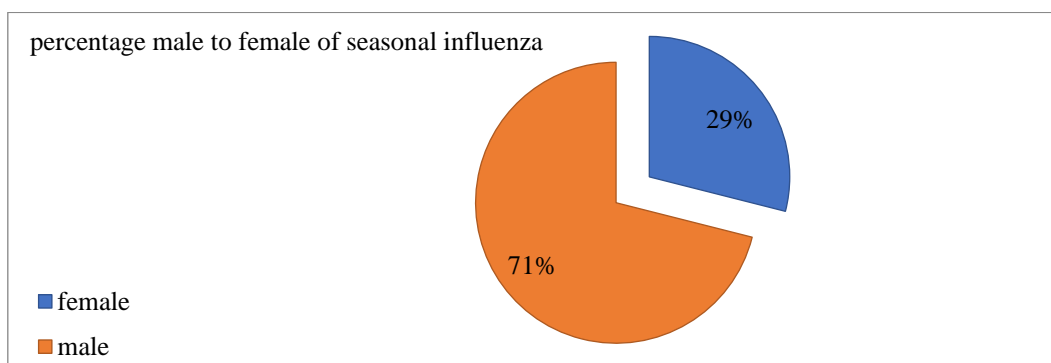


Fig. 1. percentage male and female of patients with seasonal influenza.

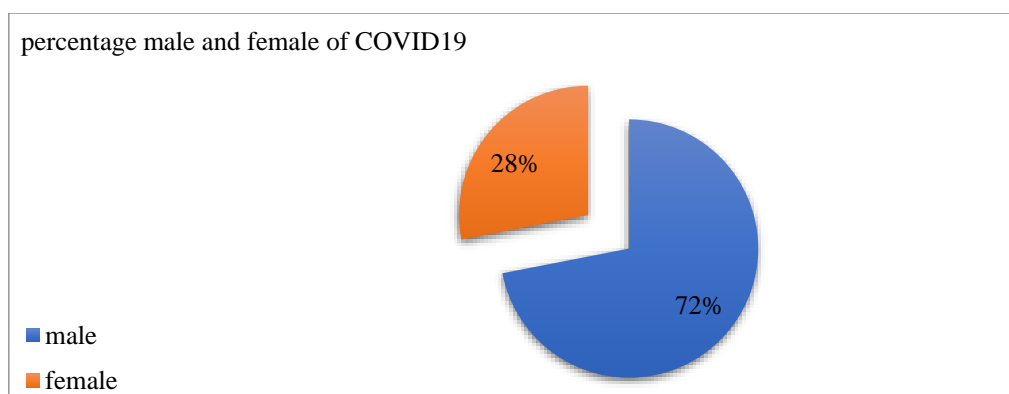


Fig. 2. percentage male and female of patients with COVID-19.

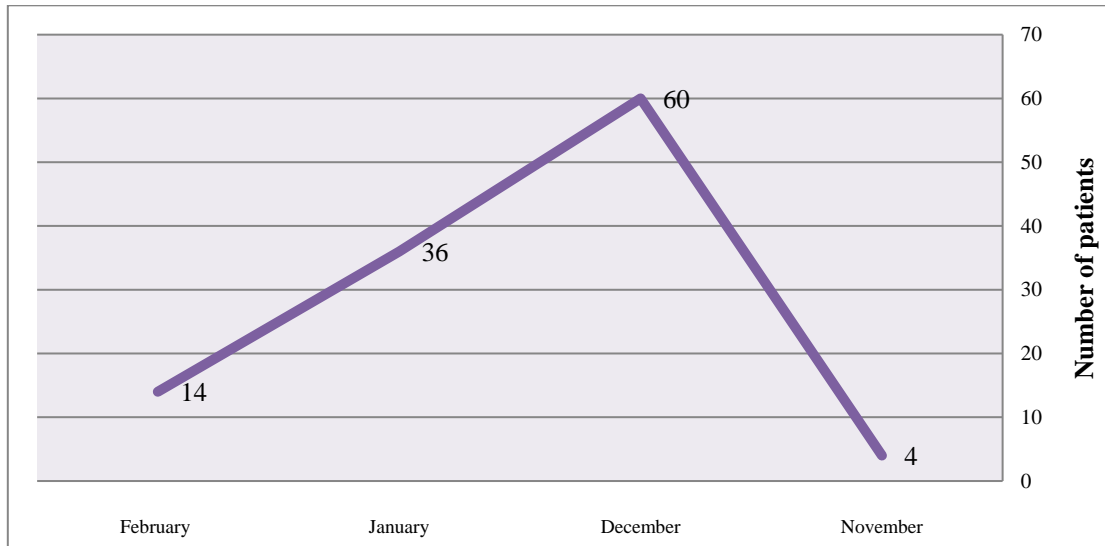


Fig. 3. seasonal influenza patients between November 1, 2022, and February 28, 2023

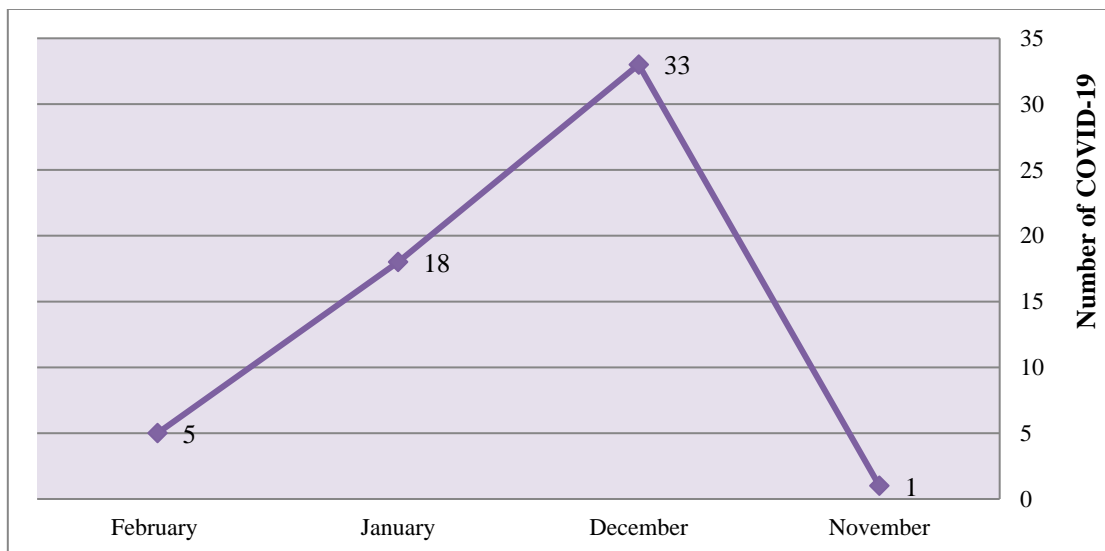


Fig. 4. COVID-19 patients between November 1, 2022, and February 28, 2023 .

Table.1. Number and percentage male to female of patients infected with seasonal influenza and COVID-19

	Seasonal influenza n=114(67%)	COVID-19 n=57 (33%)
Age		
Mean(SE),Month	17.54(1.96)	15.07(1.64)
<18,n(%)	8 (7)	3(5)
≥18 n(%)	106 (93)	54(95)
Sex,No,(%)		
Male	81(71)	41(72)
Female	33(29)	16(28)

Each result represent the mean± SE.

Table.2. seasonal influenza& COVID-19 by patient age

Age (months)	Number of seasonal influenza patients	Percentage %	Number of COVID-19 patients	Percentage %
1-6	30	26	17	30
7-12	4	04	2	03
13-18	71	62	34	60
18 >	9	08	4	07

5. CONCLUSION

The observed findings revealed that December was more prone to seasonal influenza and COVID-19 compared to other months. These findings are in agreement with the many works, who described simultaneous COVID-19 and influenza infections to be severe. It is worth noting that the outbreak of COVID-19 began in December 2019, which corresponds to the influenza season. Therefore, it is important for clinicians to distinguish COVID-19 from other respiratory infections, including influenza.

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