Preplanned Studies

Early Warning of School Influenza Using Symptom and Illness-Related Absenteeism Surveillance — Guangdong Province, China, 2023–2024 Academic Year

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Summary

What is already known about this topic?

Schools are high-risk settings for influenza transmission, and both illness-related absenteeism and symptom surveillance capture infectious disease activity in this population, making them promising signals for early warning.

What is added by this report?

In this study, weekly counts of influenza-like illness (ILI) and absenteeism person-days correlated strongly with confirmed influenza cases and coincided with all four major influenza peaks within ±1 week. Symptom-based alerts tracked case-based alerts with high sensitivity.

What are the implications for public health practice?

This province-wide study in Guangdong provides practical evidence for the early warning of school influenza. Integrating ILI and absenteeism data into routine surveillance platforms could yield timely, actionable signals for the early warning of school influenza.

ABSTRACT

Introduction: Schools are high-risk settings for influenza transmission. This study assessed how well illness-related absenteeism and symptom surveillance provided early warning of school influenza in Guangdong Province during the 2023–2024 school year.

Results: Absenteeism, ILI, and confirmed influenza cases showed consistent winter–spring bimodal patterns, with higher peaks during the autumn semester. These indicators differed significantly by educational stage, sex, and region (P<0.001). Weekly ILI counts and absenteeism person-days were strongly correlated with confirmed influenza case counts (ρ =0.975 and 0.983, respectively; P<0.01). For both indicators, peak-match rates within ±1 week were 100% (4/4). Symptom-based warnings had high sensitivity (0.940) and accurately reflected daily changes in school influenza activity.

Methods: Illness-related absenteeism and symptom surveillance records were linked to confirmed influenza case reports from the same period, and their temporal, geographic, and population distributions were analyzed. Spearman rank correlation and prominence-based peak detection were used to assess correlations and peak concordance among influenza-like illness (ILI), absenteeism, and confirmed influenza cases. Symptom-based warnings were evaluated against using case-based warning as the reference standard.

Conclusions: Illness-related absenteeism and symptom surveillance effectively reflected the intensity and temporal patterns of school influenza activity. Integrating ILI and absenteeism indicators could provide timely risk signals for the early warning of school influenza and support coordinated, targeted interventions by education and public health authorities.

Schools are high-density settings in which close contact facilitates transmission of acute respiratory infections (*1*). Influenza is a common infectious disease among children and adolescents, which may cause outbreaks and disrupt teaching (*2*). Early warning and rapid response are therefore public health priorities. Illness-related absenteeism and symptom reporting are increasingly used for school-based surveillance (*3*). Evaluations in Chinese cities have shown that the corresponding indicators reflect temporal patterns of common infectious diseases (*4*–*7*). Other studies have linked absenteeism to influenza activity, suggesting it may provide useful warning signals (*8*–*10*). However,

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most previous studies were conducted at city or district level, relying primarily on aggregated data. Province-wide evidence from standardized surveillance platforms remains limited, particularly linking warning outputs to confirmed influenza.

The Guangdong Provincial Centers for Disease Control and Prevention (CDC) have established a province-wide health surveillance system for children and adolescents that captures health examination, illness-related absenteeism, symptom reports, and follow-up etiologic information. This study aimed to describe the characteristics of influenza among students, evaluate correlations between surveillance indicators and confirmed influenza, and assess how symptom-based warnings performed relative to case-based warnings. The findings may inform improvements to the surveillance platform and strengthen coordination between education and public health authorities in school influenza warning and response.

Three datasets were used. First, absenteeism data for the 2023–2024 school year (September 1, 2023–July 31, 2024) came from the Guangdong Provincial Children and Adolescent Health Surveillance System, comprising 39 teaching weeks and 191 planned school days. Schools with fewer than 10 missing reporting days were included. Second, confirmed influenza cases for the same period were extracted from the China Information System for Disease Control and Prevention. Cases matching students enrolled in the included schools were retained. Third, a linked dataset was created by merging the two within the system through encrypted deterministic linkage using students' identity card numbers, with symptom dates aligned to diagnosis dates. Records with missing or invalid identifiers, unresolved duplicates, or inconsistent key dates were excluded. The analytical dataset contained no sensitive personal information.

Influenza-like illness (ILI) was defined as fever (≥38 ℃) with cough or sore throat. Absenteeism and symptom records were reported on planned school days. A planned school day without an illness-related absenteeism report or a zero report was classified as missing. Symptoms reported on non-teaching days were retained but excluded from absenteeism-rate calculations. Symptom surveillance was characterized by absenteeism person-days, absenteeism rate, ILI-related absenteeism rate, and percentage of absenteeism attributable to ILI, and confirmed influenza cases by reporting rate (*11*). Peaks were local maxima prominent relative to adjacent troughs, and identified using a prominence threshold of 0.5 times the interquartile range (IQR).

Symptom-based warnings were triggered when a school recorded ≥10 ILI reports within a rolling 7-day window, consistent with the national guidelines for the response to ILI outbreaks. Case-based warnings from confirmed influenza reports served as the reference standard, and symptom-based warnings as the index. A day was warning-positive if at least one signal occurred.

Temporal, geographic, and population distributions were analyzed, and the differences were assessed using chi-square tests. Weekly ILI and absenteeism data were compared with confirmed influenza cases using Spearman rank correlation across a ± 5 week-lag window (*12*). A positive lag indicated that the school-based indicator preceded confirmed influenza. Major peaks were identified using prominence-based peak detection (*13*), with concordance calculated through exact-week, ±1 week, and ±2 weeks. Warning performance was evaluated at planned-school-day level by calculating sensitivity, specificity, positive predictive value (PPV), and negative predictive value (NPV) (*14*). Statistical analyses were performed using Python 3.9 (Python Software Foundation, Wilmington, Delaware, USA). A two-sided $P<0.05$ was considered statistically significant.

Among 663,463 students from 275 schools, overall and ILI-related absenteeism rates were 1.18% (1,489,195/126,721,433) and 0.15% (193,085/126,721,433), respectively (Table 1). ILI-related absenteeism accounted for 12.97% (193,085/1,489,195) of absenteeism person-days. Absenteeism and symptom reports exhibited winter–spring bimodality, with greater autumn activity. Weekly absenteeism peaked in week 17 (68,524/2,653,852, 2.58%), and declined before the winter vacation (Figure 1A). Activity was lower in the spring semester, with peaks in weeks 3 (45,608/3,317,315, 1.37%) and 12 (42,420/3,980,778, 1.07%). Symptom reporting followed a similar pattern, peaking in autumn week 16 (45,056 symptom reports; 3,453 ILI reports) (Figure 1B). Fever, cough, and headache were the most frequently reported symptoms, and upper respiratory tract infection (URTI) was the most frequent cause of illness (Supplementary Table S1, available at https://weekly.chinacdc.cn/).

Rates differed significantly by educational stage, sex, and region ($P<0.001$) (Table 1). Absenteeism rate decreased across successive stages: kindergarten (130,592/2,497,707, 5.23%); primary school (714,924/60,522,552, 1.18%); junior high school

TABLE 1. Distribution of overall and ILI-related absenteeism.

Variables	Number of students	Absenteeism person-days (person-day)	Absenteeism rate (%)	ILI-related absenteeism person-days (person-day)	ILI-related absenteeism rate (%)	Percentage of absenteeism attributable to ILI (%)	*P*
Overall	663,463	1,489,195	1.18	193,085	0.15	12.97	
Educational stage							< 0.001
Kindergarten	13,077	130,592	5.23	13,552	0.54	10.38	
Primary school	316,872	714,924	1.18	99,137	0.16	13.87	
Junior high school	193,389	428,782	1.16	46,343	0.13	10.81	
Senior high school	140,125	214,897	0.80	34,053	0.13	15.85	
Sex							< 0.001
Boy	351,661	822,870	1.23	108,279	0.16	13.16	
Girl	311,802	666,325	1.12	84,806	0.14	12.73	
Area							< 0.001
Pearl River Delta	341,979	872,944	1.34	134,930	0.21	15.46	
Northern Guangdong	218,582	405,477	0.97	46,461	0.11	11.46	
Western Guangdong	53,926	131,795	1.28	9,787	0.10	7.43	
Eastern Guangdong	48,976	78,979	0.84	1,907	0.02	2.41	

Note: Absenteeism rate = absenteeism person-days / total person-days taught × 100%. ILI-related absenteeism rate = ILI-related absenteeism person-days / total person-days taught × 100%. Percentage of absenteeism attributable to ILI = ILI-related absenteeism person-days / absenteeism person-days × 100%. Total person-days taught = number of students × planned school days.
Abbreviation: ILI=influenza like illness.

(428,782/36,937,299, 1.16%); senior high school (214,897/26,763,875, 0.80%). Overall absenteeism rates were highest in the Pearl River Delta (872,944/65,317,989, 1.34%) and western Guangdong (131,795/10,299,866, 1.28%). ILI-related rates were highest in the Pearl River Delta (134,930/65,317,989, 0.21%) and northern Guangdong (46,461/41,749,162, 0.11%). Boys had slightly higher overall and ILI-related rates than girls (1.23% *vs.* 1.12%; 0.16% *vs.* 0.14%).

The confirmed influenza dataset contained 19,102 cases with an overall reporting rate of, 2.88% (19,102/663,463) (Supplementary Table S2, available at https://weekly.chinacdc.cn/). Cases exhibited a winter–spring bimodality, peaking in autumn week 16 at 2,091 cases (Figure 2A). Activity was lower in the spring semester, peaking in week 3 at 334 cases. Reporting rates were highest in the Pearl River Delta (12,378/341,979, 3.62%) and among kindergarten students (799/13,077, 6.11%), and decreased across successive stages. The rate was higher among boys (10,841/351,661, 3.08%) than girls (8,261/311,802, 2.65%). Weekly reporting-rate patterns by educational stage resembled the confirmed-case distribution, consistently higher among kindergarten students than at other stages (Figure 2B).

The linked dataset included 264 schools and 12,166 confirmed cases with absenteeism records, representing 96.00% (264/275) of included schools and 63.69% (12,166/19,102) of confirmed cases. Seasonal patterns in symptom and ILI reports persisted after linkage. Both peaked in autumn week 16 (2,561 symptom reports; 469 ILI reports), and showed smaller spring peaks in week 3 (500 and 90) and week 12 (443 and 81) (Supplementary Figure S1, available at https://weekly.chinacdc.cn/). Confirmed influenza followed a similar pattern, peaking in autumn week 16 (1,387 cases) and spring week 3 (246 cases). Reporting rates again remained highest in the Pearl River Delta (8,534/341,979, 2.50%) and among kindergarten students (636/13,077, 4.86%), and decreased across successive educational stages, and were higher among boys than girls (1.97% *vs.* 1.68%).

Temporal patterns of absenteeism, ILI, and confirmed influenza were highly consistent (Figure 3A). Weekly ILI counts (ρ =0.975, P<0.01) and absenteeism person-days (ρ =0.983, P<0.01) were strongly correlated with confirmed influenza case counts. At a lag of +1 week, correlations remained significant for ILI (ρ =0.713, P<0.01) and absenteeism (ρ =0.766, P<0.01). Both indicators matched all four major confirmed influenza peaks within ±1 week. ILI matched 100.0% (4/4) of confirmed influenza peaks within all preset windows; median and mean absolute

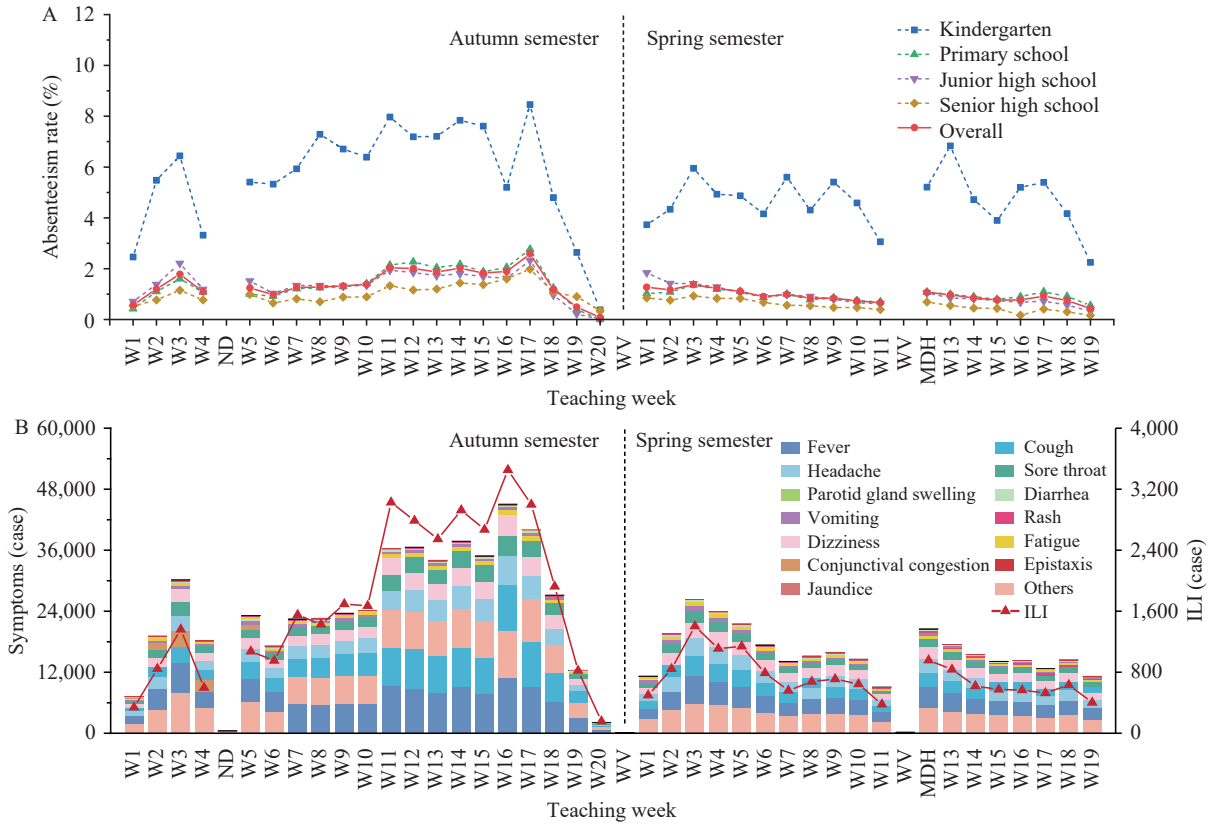

FIGURE 1. Distribution of absenteeism and reported symptoms across teaching weeks in the absenteeism dataset. (A) Absenteeism rates by educational stage. (B) Reported symptoms and ILI.
Note: Symptoms occasionally reported on non-teaching days, such as by boarding students or those returning before the formal teaching week.
Abbreviation: ILI=influenza like illness; MDH=May Day holiday; ND=National Day; W=week; WV=winter vacation.

peak-time differences were 0 weeks.

Symptom-based warnings also tracked case-based warnings (ρ =0.351, *P*<0.01) (Figure 3B). Warning counts remained low from September to mid-November, clustered from late November through early January, and less prominently in early March and mid-May. Daily symptom-based warnings had a sensitivity of 0.940, specificity of 0.179, PPV of 0.476, and NPV of 0.792. At least one symptom-based warning occurred in every teaching week.

DISCUSSION

This province-wide Guangdong study linked individual-level data from two surveillance systems to evaluate the early warning value of school-based symptom surveillance. The large sample of 663,463 students provides practical evidence that may inform application of this approach elsewhere in southern China.

Absenteeism, ILI, and confirmed influenza all exhibited consistent winter–spring bimodal patterns, with a substantially larger autumn peak. In the linked dataset, symptom reports were substantially less frequent than overall absenteeism in spring, which reflected a broader range of health events than influenza alone. URTI, injuries, and gastrointestinal diseases were main self-reported causes. The pattern may also reflect non-influenza illnesses, non-infectious causes, and incomplete reporting. The pre-holiday decline likely reflected attendance changes and reduced reporting completeness during examinations and end-of-term activities. Given increased travel and family gatherings, health reminders should be strengthened before holidays and after schools reopen, and students with ILI promptly evaluated and managed (*15*).

The burden was concentrated in the Pearl River Delta. This may reflect variation in influenza activity as well as differences in student population, school composition and density, healthcare-seeking patterns, and reporting quality. Kindergarten students had the highest absenteeism and influenza reporting rates,

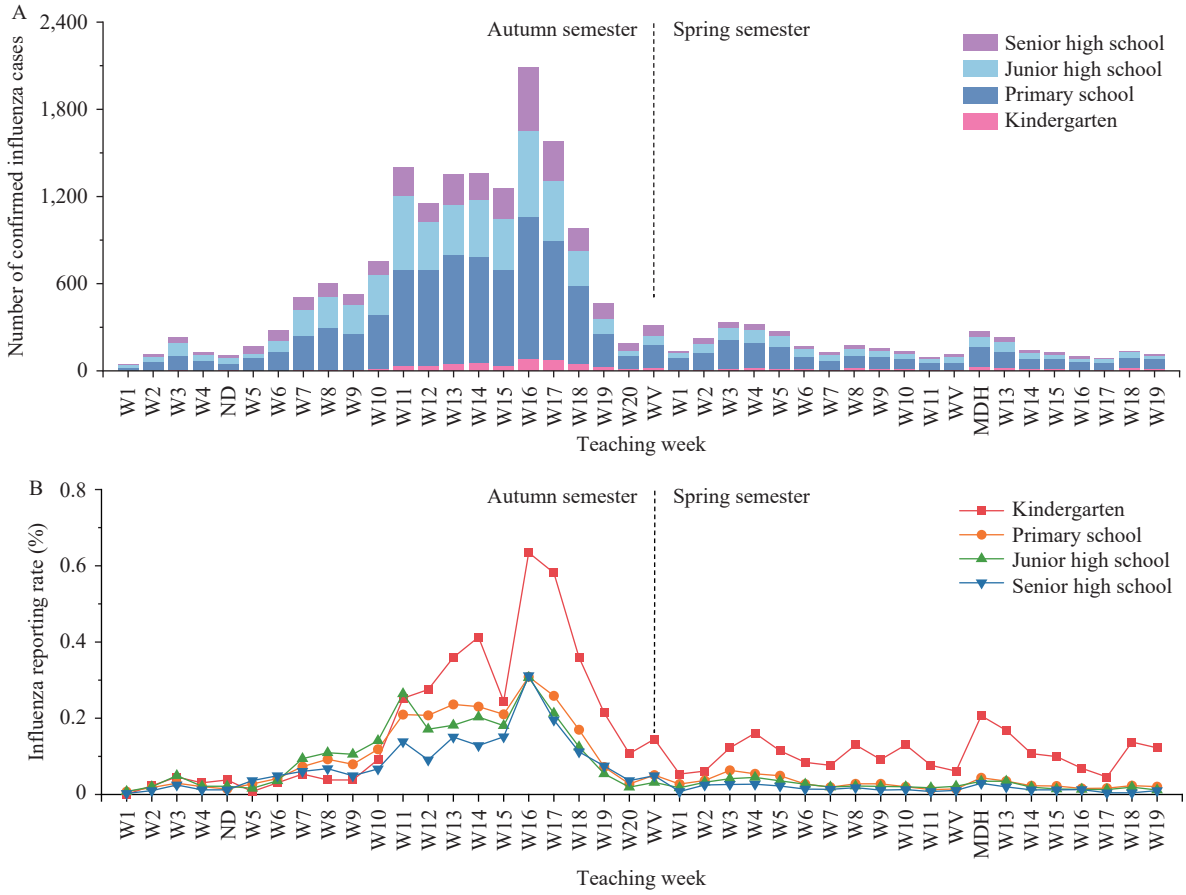

FIGURE 2. Distribution of confirmed influenza cases and reporting rates across teaching weeks. (A) Number of confirmed influenza cases. (B) Influenza reporting rates.
Abbreviation: MDH=May Day holiday; ND=National Day; W=week; WV=winter vacation.

possibly reflecting lower immunity, closer contact, less-developed self-protective behaviors, greater density in childcare settings, and more frequent medical visits (*16*). Risk also varied over time; junior high school students had relatively high reporting rates during autumn weeks 7–11. These findings suggest combining routine protection for younger children with dynamic monitoring of stage-specific increases during high-risk weeks. Boys had slightly higher rates than girls, possibly reflecting differences in infection risk or healthcare-seeking behavior. Collectively, they may help identify priority groups for surveillance and response but do not demonstrate independent causal effects.

Significant correlations at a lag of +1 week indicated that ILI or absenteeism in week t was correlated with confirmed influenza in week t+1. The strongest correlations occurred at a lag of 0, likely because of short intervals between symptom onset, school absence, diagnosis, and reporting. Symptom surveillance may therefore provide both real-time situational awareness and up to 1-week advance information. Improving reporting completeness and timeliness, refining warning rules, and platform optimization may further strengthen signal detection. Peak concordance also indicated that ILI and absenteeism were stable indicators of influenza activity. Although they cannot provide complete etiologic or clinical confirmation, their consistent trends and peak timing with confirmed influenza show that school-reported data capture changes and peaks in influenza activity and can therefore complement case-based surveillance by supporting situational awareness and early risk assessment.

The high daily sensitivity of symptom-based warnings indicated that most days with case-based warnings were identified. However, low specificity and moderate PPV indicated a false-positive burden that could increase verification workload and alert fatigue. This is expected because illness-related absenteeism and ILI are not specific to influenza, and the standardized threshold ignores differences in school size. Temporal

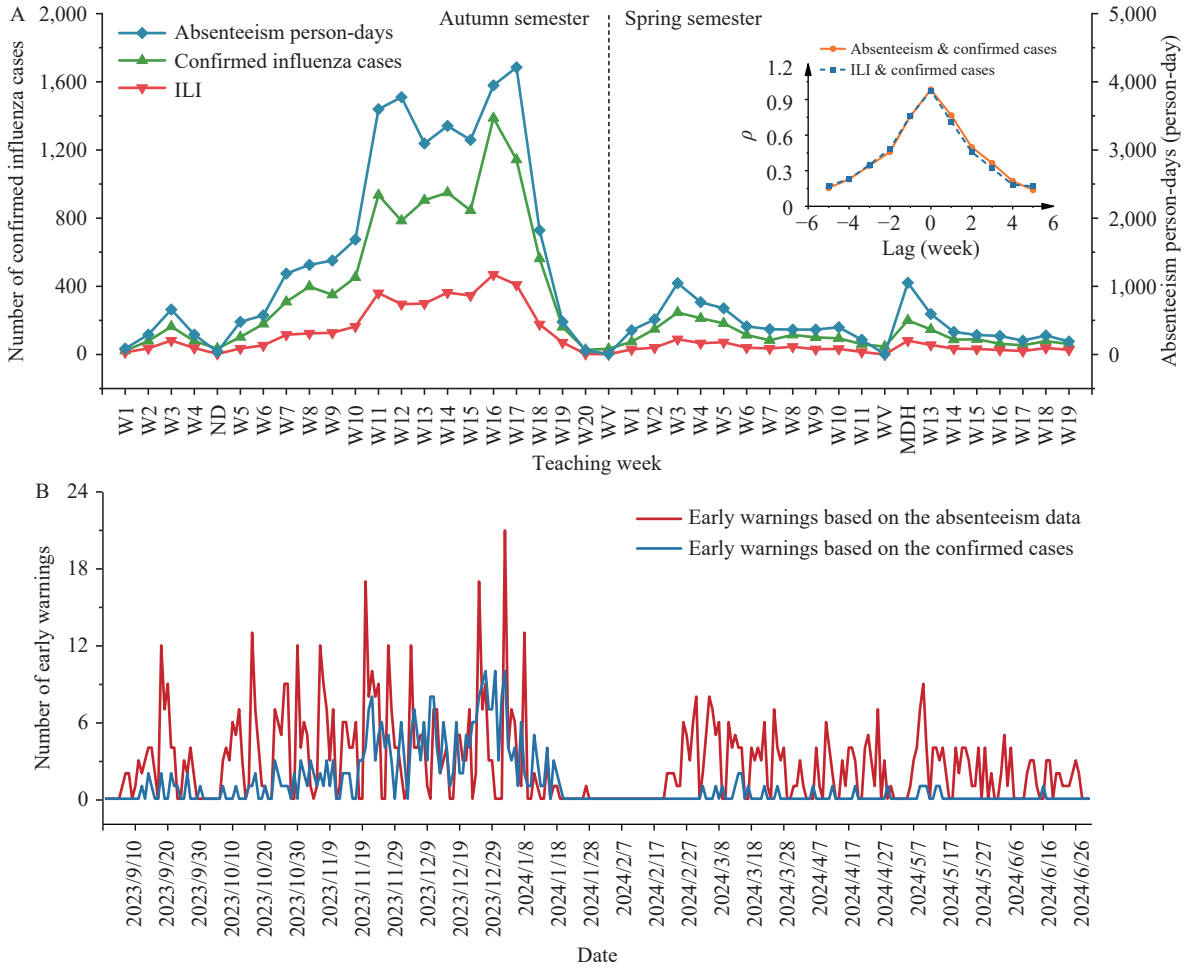

FIGURE 3. Distribution of linked surveillance indicators and warning performance. (A) Absenteeism, ILI, and confirmed influenza cases across teaching weeks. (B) Early warnings by date.
Note: Prominence = 0.5 × IQR, distance = max(1, n / 30), where n is the length of the time series.
Abbreviation: ILI=influenza-like illness; IQR=interquartile range; MDH=May Day holiday; ND=National Day; W=week; WV=winter vacation.

dependence may also have affected warning performance estimates. Nevertheless, these indicators can provide practical prompts for timely verification, health checks, and school-level responses, providing timely risk signals to education and public health authorities.

This study has several limitations. First, it covered only one school year and lacked external validation, limiting assessment of interannual variation and generalizability, precluding stratified lag analyses, multivariable modeling, and quantitative forecasting. Second, reporting criteria, completeness, timeliness, and coverage may have varied across schools and regions, particularly around holidays, biasing absenteeism rates, warning counts, and lead-lag estimates. Finally, illness-related absenteeism and ILI are not specific to influenza, and influenza subtype data were unavailable, potentially affecting the observed associations and overestimating burden.

Integrating ILI and absenteeism data into a standardized surveillance platform could provide timely, practical signals for school influenza warnings. An isolated alert should prompt report verification, records review, and health checks; persistent or clustered alerts within 1 week, joint verification by the CDC and school followed by targeted preventive measures; case-based warnings or confirmed clusters, etiologic testing, risk assessment, outbreak reporting, and control. Tailor actions by educational stage: kindergartens, morning checks, parent communication, and shared-surface disinfection; primary schools, classroom-level monitoring and reduced interclass mixing during clusters; high schools, self-reporting, dormitory monitoring, and

management of group activities. Education authorities should support implementation and coordination across schools. Platform optimization should balance sensitivity against response workload and strengthen interdepartmental data feedback and quality control to provide more precise and actionable decision support for preventing and controlling infectious disease in schools.

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Ethical statement: The Medical Research Ethics Review Committee of the Guangdong Provincial Center for Disease Control and Prevention exempted this study from ethical review because it used anonymized data from the project "Research on Common and Infectious Diseases and Related Influencing Factors Among Students in Guangdong Province".

Conflicts of interest: No conflicts of interest.

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REFERENCES

1. Chen L, Wang LP, Xing Y, Xie JQ, Su BB, Geng MJ, et al. Disparity in spectrum of infectious diseases between in-school and out-of-school children, adolescents, and youths in China: findings from a successive national surveillance from 2013 to 2021. Lancet Reg Health West Pac 2023;38:100811. https://doi.org/10.1016/j.lanwpc.2023.100811.
2. He J, Hou S, Chen Y, Yu JL, Chen QQ, He L, et al. The epidemiological pattern and co-infection of influenza A and B by surveillance network from 2009 to 2014 in Anhui Province, China. Front Public Health 2022;10:825645. https://doi.org/10.3389/fpubh.2022.825645.
3. Donaldson AL, Hardstaff JL, Harris JP, Vivancos R, O'Brien SJ. School-based surveillance of acute infectious disease in children: a systematic review. BMC Infect Dis 2021;21(1):744. https://doi.org/10.1186/s12879-021-06444-6.
4. Zhang W, Huang YY, Wen Y, Gu ZH, Chen DY, Zhang Z. Evaluation of early warning performance of student health surveillance information system on common infectious diseases in Shenzhen, Guangdong, 2017–2022. Dis Surveill 2024;39(8):1079 – 84. https://doi.org/10.3784/jbjc.202308070399.
5. Gan ZZ, Tang XQ, Xiang H, Wu XH, Deng WW, Ye ML. Research on early warning model of primary and secondary school students' absenteeism due to illness in Nan'an District of Chongqing City from 2020 to 2021. Chin J Sch Doctor 2022;36(7):500-3,552. https://www.zgxyzz.org.cn/CN/Y2022/V36/I7/500#4. (In Chinese).
6. Lu L, Zeng QM, Li LQ, Chen JS. Analysis of monitoring situation of students' absenteeism due to illness in 2015–2018 academic year in Shunde District, Foshan City. Chin J Sch Doctor 2022;36(6):420-3. https://www.zgxyzz.org.cn/CN/Y2022/V36/I6/420. (In Chinese).
7. Guan TJ, Xiao WH, Yang RD. Analysis of data from the school infectious disease symptom surveillance system — Zhuhai City, 2015–2019. Chin J Sch Health 2020;41(9):1417-9. http://doi.org/10.16835/j.cnki.1000-9817.2020.09.039. (In Chinese). (Accessed on June 16, 2026).
8. Liu MW, Wang J, Yang XH, Song SJ. Surveillance for school absence due to influenza like illness in children in Hangzhou, Zhejiang, 2018–2020. Dis Surveill 2020;35(11):1008 – 13. https://doi.org/10.3784/j.issn.1003-9961.2020.11.011.
9. Wang ZZ, Yu HJ, Jiang HL, Xiong Y, Tong YX, Yin JF, et al. Changing trend of sickness absenteeism among students during 2010–2017 academic years and its correlation with the incidence of acute infectious diseases in Jiading District, Shanghai. Chin J Sch Health 2023;44(6):914 – 8. https://doi.org/10.16835/j.cnki.1000-9817.2023.06.027.
10. Quandelacy TM, Zimmer S, Lessler J, Vukotich C, Bieltz R, Grantz KH, et al. Predicting virologically confirmed influenza using school absences in Allegheny County, Pennsylvania, USA during the 2007-2015 influenza seasons. Influenza Other Respir Viruses 2021;15(6):757 – 66. https://doi.org/10.1111/irv.12865.
11. Yang Z, Jiang CH. Pilot influenza syndromic surveillance system based on absenteeism and temperature in China: development and usability study. JMIR Public Health Surveill 2022;8(10):e37177. https://doi.org/10.2196/37177.
12. Zviedrite N, Jahan F, Zheteyeva Y, Gao HJ, Uzicanin A. School closures due to seasonal influenza: a prospective data collection-based study of eleven influenza seasons—United States, 2011–2022. Lancet Reg Health Am 2024;34:100741. https://doi.org/10.1016/j.lana.2024.100741.
13. Kashyap B, Horne M, Pathirana PN, Power L, Szmulewicz D. Automated topographic prominence based quantitative assessment of speech timing in cerebellar ataxia. Biomed Signal Process Control 2020;57:101759. https://doi.org/10.1016/j.bspc.2019.101759.
14. Jiang J, Lu Y, Li M, Sun Y, Lin R, Liu R, et al. Predicting hyperopic reserve in children based on school-based vision programs with ensemble learning. Front Public Health 2026;14:1910531. https://doi.org/10.3389/fpubh.2026.1910531.
15. Donaldson AL, Harris JP, Vivancos R, O'Brien SJ. Can cases and outbreaks of norovirus in children provide an early warning of seasonal norovirus infection: an analysis of nine seasons of surveillance data in England UK. BMC Public Health 2022;22:1393. https://doi.org/10.1186/s12889-022-13771-z.
16. Li J, Ma QQ, Huang Y, Zhang SJ. Analysis of online reporting of infectious disease-related symptom surveillance among primary school students — Xi'an City, 2015–2018. Chin J Sch Health 2020;41(4):624-6. http://dx.doi.org/10.16835/j.cnki.1000-9817.2020.04.039. (In Chinese). (Accessed on June 16, 2026).

SUPPLEMENTARY MATERIAL

SUPPLEMENTARY TABLE S1. Most frequently reported symptoms and self-reported causes of illness by educational stage.

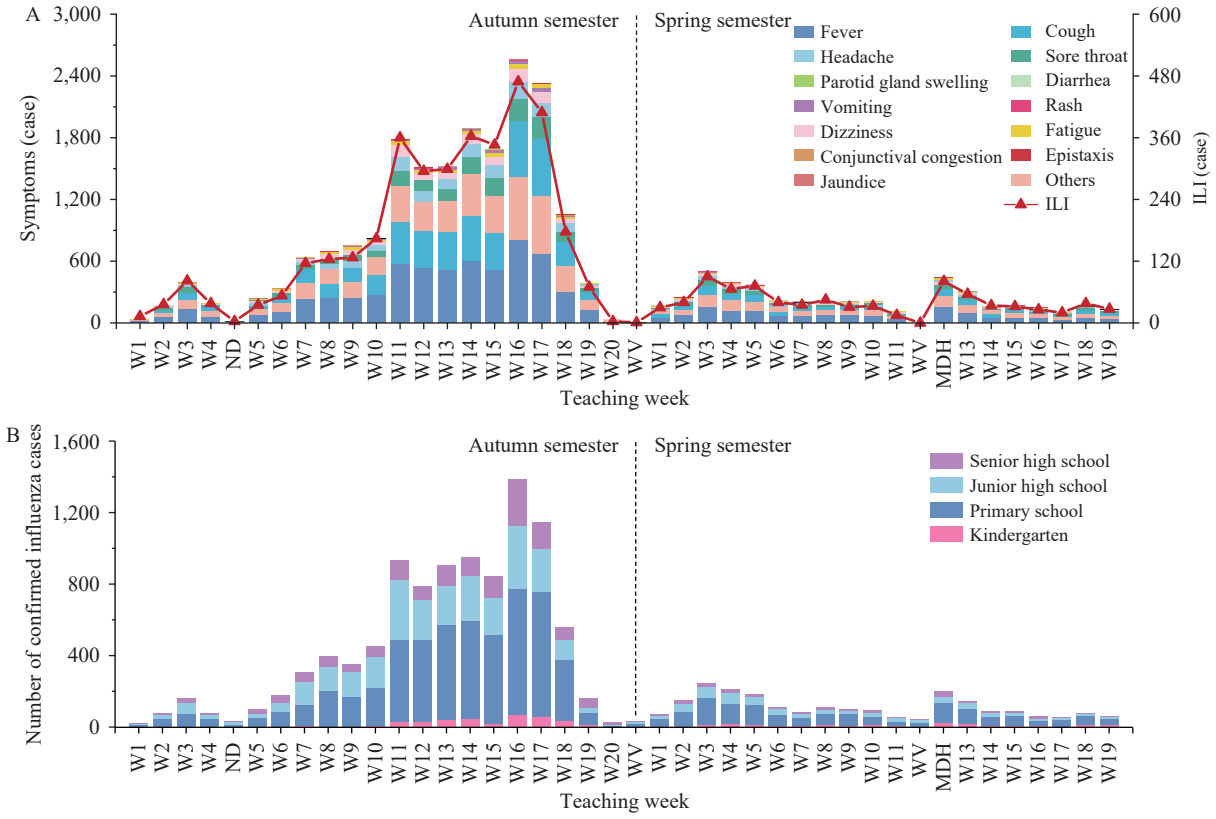
Rank	Kindergarten	Primary school	Junior high school	Senior high school	Overall
Symptom					
1st	Cough (18,319)	Fever (89,364)	Fever (49,320)	Fever (35,346)	Fever (182,712)
2nd	Fever (8,682)	Cough (80,045)	Headache (35,043)	Headache (16,107)	Cough (137,383)
3rd	Sore throat (3,585)	Headache (49,527)	Dizziness (28,190)	Cough (13,742)	Headache (101,404)
Self-reported causes of illness					
1st	URTI (7,363)	URTI (42,183)	URTI (24,235)	URTI (15,878)	URTI (89,659)
2nd	Tracheitis/pneumonia (587)	Injury (4,197)	Injury (3,946)	Injury (1,694)	Injury (10,049)
3rd	GI diseases (243)	Tracheitis/pneumonia (3,854)	GI diseases (1,545)	GI diseases (855)	GI diseases (5,722)

Note: Values in parentheses indicate the number of reports for each symptom or self-reported cause of illness.
Abbreviation: GI=gastrointestinal; URTI=upper respiratory tract infection.

SUPPLEMENTARY TABLE S2. Distribution of confirmed influenza cases.

Variables	Number of students	Number of confirmed influenza cases	Influenza reporting rate (%)	*P*
Overall	663,463	19,102	2.88	
Educational stage				<0.001
Kindergarten	13,077	799	6.11	
Primary school	316,872	9,789	3.09	
Junior high school	193,389	5,523	2.86	
Senior high school	140,125	2,991	2.13	
Sex				<0.001
Boy	351,661	10,841	3.08	
Girl	311,802	8,261	2.65	
Area				<0.001
Pearl River Delta	341,979	12,378	3.62	
Northern Guangdong	218,582	6,068	2.78	
Western Guangdong	53,926	343	0.64	
Eastern Guangdong	48,976	313	0.64	

Note: Reporting rate = number of confirmed cases / number of students × 100%.



SUPPLEMENTARY FIGURE S1. Distribution of symptoms and confirmed influenza cases across teaching weeks in the linked dataset. (A) Symptoms and ILI cases. (B) Number of confirmed influenza cases.
Abbreviation: ILI=influenza-like illness; MDH=May Day holiday; ND=National Day; W=week; WV=winter vacation.