

COVID-19 Surveillance Trends and Implementation Among Medical Students and Staff at a Saudi Medical College, 2020-2023

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Abstract

Objective: To review institutional surveillance during the coronavirus disease-2019 pandemic, and to assess trends in confirmed cases as well as the contact burden among staff and students.

Method: The retrospective, observational, analytical study was conducted at the University of Bisha College of Medicine, Saudi Arabia, and comprised all confirmed, suspected and contact cases of coronavirus disease-2019 among adult students and staff officially enrolled or employed during the 2020-21, 2021-22 and 2022-23 academic years. Case identification, contact tracing support, and transmission reduction among staff and students were focussed upon. Data was collected using standardized procedures. Targetted individuals, confirmed cases, and contacts were grouped by academic years, institutional categories, and gender. Metrics, like positivity rate, contact burden, and contacts per case, were summarised annually, and case trends were analyzed. Data was analyzed using SPSS 26.

Results: In 2020-21, among 349 students, there were 21 (6%) confirmed and 36 (10.3%) contact cases. In 2021-22, among 379 students, there were 5 (1.3%) confirmed cases and 3 (0.8%) contact cases. In 2022-23, among 419 students, there were 2 (0.5%) confirmed cases and 1 (0.2%) contact case. Confirmed cases peak in Year Four at 18.9%, Staff at 24.3%. Contact cases mainly occurred in Year Two, at 43.8%, mostly among males (91.7%). Female cases dropped to zero later, except for the staff. Category differences were significant for contact burden ($\chi^2 = 30.53$, $p = 0.0$), but not for confirmed cases ($\chi^2 = 9.24$, $p = 0.1606$). Confirmed cases varied across academic years ($\chi^2 = 25.84$, $p = 0.0$), as did contact cases ($\chi^2 = 75.54$, $p = 0.0$). Annual differences in confirmed and contact burdens were significant. The 2020-21 academic year showed higher confirmed burdens (RR 2.97, $p=0.0028$) and contacts (RR 8.99, $p=0.0$) than 2021-2022, and higher confirmed (RR 9.81, $p=0.0$) and contact burdens (RR 49.42, $p=0.0$) than 2022-2023.

Conclusion: The institutional surveillance system helped maintain a safer workplace, and supported continuity of education during the pandemic.

Keywords: COVID-19, Contact tracing, Population surveillance, Medical education, Saudi Arabia. (JPMA 76: 1801; 2026)

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Introduction

In March 2020, the World Health Organisation (WHO) declared the coronavirus disease-2019 (COVID-19) a pandemic, prompting countries to implement various public health measures.^{1,2} The pandemic disrupted global education, particularly impacting medical colleges that rely on classroom teaching, practical training and clinical exposure.^{3,4} Different countries adopted various approaches; some kept institutions open with modified measures, while others closed campuses to minimize contact and promote social distancing.^{2,5} In Saudi Arabia, schools and universities closed early in the pandemic, then resumed with blended methods — e-learning for theory and face-to-face for practical.⁶

Safe university reopening relied on timely case detection, quarantine, isolation, contact tracing and adaptable operational protocols, in addition to basic infection-prevention measures.^{7,8} Educational institutions are vulnerable to respiratory infections due to close contact, shared spaces and person-to-person interactions. Saudi Arabian COVID-19 guideline warned that workplaces face increased risks from social interactions, contact with suspected cases and contaminated surfaces.⁹ Consequently, surveillance systems became essential for early case detection, trend monitoring, supporting interventions, and maintaining institutional functions.¹⁰⁻¹² Academic institutions adopted infection control measures, including surveillance, reporting, case detection, contact management, and coordination, to limit the spread of COVID-19 and mitigate disruptions. However, patterns of confirmed and contact cases in university settings haven't been consistently described in relation to these measures. This study aims to describe COVID-19 case trends among targetted individuals at the University of Bisha College of Medicine (UBCOM) from 2020 to 2023.

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Materials and Methods

This retrospective descriptive and analytical study was conducted at UBCOM and analyzed surveillance data from the academic years 2020–2021, 2021–2022, and 2022–2023.

Bisha, in southern Saudi Arabia at an elevation of about 2,000 feet, has roughly 414,197 residents, most of whom are farmers.¹³ The University of Bisha, established in 2013–14 in the Asir region, comprises 15 colleges and over 40 programmes.¹⁴

The study sample included all students and staff officially enrolled or employed at UBCOM during the pre-identified surveillance periods. Only individuals aged 18 or older were eligible for inclusion. Individuals aged <18 years, those not actively enrolled or employed at the college, cases with surveillance events outside the study timeframe, and those with incomplete data were excluded. The specific criteria ensured the surveillance population accurately represented the active institutional community under regular observation throughout the study.

In terms of operational definitions, a confirmed case was “any eligible student or staff member with a documented positive COVID-19 test result during the study period, regardless of symptoms”. The confirmation date was the date the positive result was issued or officially reported to the college surveillance system. A suspected case was “any eligible individual reporting symptoms compatible with COVID-19, with epidemiological suspicion of infection, or absent from college activities for a reason potentially consistent with COVID-19, but without laboratory confirmation at initial notification”. A contact case was “an eligible individual identified through institutional surveillance or contact tracing as having had close exposure to a confirmed COVID-19 case, in accordance with institutional procedures and national guidance”. Contacts were generally considered exposed if they were within close proximity to a confirmed case for a duration and distance that met the institution's public health definition during the study.

This study focussed on key variables, including academic year, target population size, confirmed cases, and contact cases. Rates were determined by dividing confirmed or contact cases by the total target population. Data were sourced from institutional COVID-19 surveillance records. Confirmed cases were defined according to the institution's diagnostic and reporting protocols in place during the study. Contact cases were identified through the institution's contact tracing and monitoring procedures. To maintain consistency, cases were assigned to the academic year in which the initial report of a positive test, suspected

episode, or exposure event occurred. When a suspected case was later confirmed through laboratory testing, the individual was classified as a confirmed case in the final analysis. Similarly, a contact who subsequently tested positive was reclassified as a confirmed case for the analysis of the related disease burden. Duplicate notifications for the same illness episode or exposure event were combined and counted once to prevent double-counting. A repeat case was considered a new event only if the record explicitly indicated a separate epidemiological episode, such as a new infection or exposure after the previous one was resolved.

Data was collected using three structured forms for COVID-19 surveillance among students and staff, covering suspected, confirmed, and contact cases. These forms followed UBCOM guidelines based on suggestions from the Saudi National Center for Disease Control and Prevention (CDC) and the Ministry of Health (MOH).^{15,16} The forms collected standardized data on sociodemographic information, contact details, symptoms, signs, laboratory results, and exposure history. The suspected case form aided initial reporting, the confirmed case form recorded lab-confirmed infections and follow-up, and the contact case form tracked exposed individuals through contact tracing for risk assessment. Additional data on absenteeism and sick leave were collected from course coordinators. Due to the small population, data was collected manually, with the surveillance focal person contacting cases, completing forms, and preparing reports.

UBCOM's surveillance guidelines and response plan (personal communication, August 15, 2023) designated a responsible person for case notifications, contact tracing, and reporting, and required symptomatic individuals to stay home, notify the UBCOM focal person, and complete forms or contact clinics for assessment. According to the guidelines, positive cases were asked to isolate, follow MOH guidelines, inform UBCOM, submit forms and lab results, and only return after negative confirmation. All close contacts (<2 meters for >15 minutes) had to notify UBCOM, fill forms, and self-isolate for two weeks. Any contact with suspected or confirmed cases required notification, but no quarantine was necessary. Those with mild symptoms (excluding shortness of breath) were required to contact MOH, follow home isolation if diagnosed, and update UBCOM. Asymptomatic positive individuals had to self-isolate, inform UBCOM, and submit results. Moreover, during the study period, the UBCOM response plan was applied in accordance with institutional procedures; the institution followed standardized infection prevention and control measures, such as screening, reporting, isolation or quarantine, when necessary, decontamination, and administrative coordination for case follow-up. These

measures were consistently implemented as part of the surveillance system and helped classify reported cases and contacts. Decontamination involved a specialized team wearing disposable gloves, masks, and gowns. Team members disinfected surfaces such as light switches, handles, and desks with MOH-approved disinfectants, including hydrogen peroxide and 1000ppm sodium hypochlorite, following the manufacturers' instructions. In terms of administrative outcomes, the surveillance focal person regularly submitted reports and recommendations to UBCOM leadership, which served as the primary evidence for decisions during the study.

Data on confirmed, suspected, and contact cases of COVID-19 were collected using simplified forms (Annexure 1-3). Information was entered into Excel and categorized. Absentees and initially suspected cases were reclassified after investigations.

Additional files: Data collection tools

Annex 1: Epidemiological Investigation Form No.1

The College of Medicine's COVID-19 Suspected Cases Reporting Form

Date of filling this form: / / Time: :

Please answer all the following questions. This form is used for official purposes only.

No	Questions	Answers
1.	Name:	
2.	University employee/student No.	
3.	What is your job at the College of Medicine?	☐ Student ☐ Employee ☐ Faculty ☐ Worker ☐ Others
4.	Mobile Number:	
5.	If you are student, mention your year and the running course in your class	Year NO Running Course Title
6.	Were you in a close contact (less than two meters distance for 15 minutes duration) with the COVID-19 confirmed case?	☐ Yes ☐ No
7.	If you answered "Yes" in question.6, please determine the COVID-19 confirmed case you contacted	
8.	If you answered "Yes" in question.6. Where was the location when you contacted the COVID-19 confirmed case?	
9.	Did you do the COVID-19 test?	☐ Yes* ☐ No
10.	If you answered question.9 "Yes". Where did you do the COVID-19 test?	
11.	If you answered question.9 "No". When do you will do the COVID-19 test?	
12.	Mention the symptoms of COVID-19 you develop	The symptoms:
13.	When did you start feeling symptoms of the disease?	
14.	When was your last college attendance?	
15.	Where were you in your last attendance in the college?	
16.	With whom were you in close contact (less than two meters distance for 15 minutes duration) during the last visit to the College of Medicine? Mention them	

I hereby confirm that the information provided herein is accurate. And in case any information given proves to be incorrect, I shall be responsible for the consequences.

Name: Signature:

* It is required to provide the college with a documentation of the positive test of the confirmed case or any other needed documents.

The primary outcome was the incidence rate of confirmed COVID-19 cases among eligible students and staff during the surveillance period, calculated as the number of new confirmed cases divided by the total number under surveillance per academic year. Secondary outcomes included positivity rate, absenteeism rate, contact burden by academic year and category, and the occurrence of epidemiologically linked transmission clusters identifiable from records. The positivity rate was defined as the number of lab-confirmed COVID-19 positive results divided by the number of tests conducted among eligible participants during the same academic year. The absenteeism rate was the proportion of eligible students or staff absent due to suspected COVID-19, confirmed infection, isolation, or quarantine following close contact, divided by the total number under surveillance during the period. Transmission clusters were defined as two or more linked confirmed cases within the same setting, such as a class, office, or activity, during a plausible transmission interval, identified through surveillance and contact tracing. To estimate the amount of academic disruption avoided, the total confirmed cases and contact cases were multiplied by assumed interruption durations of 5, 10, and 14 days. This yielded lower, base-, and upper-bound estimates of disruption-days prevented through case detection, isolation, and contact tracing. Counts of targetted individuals, confirmed cases, and contact cases were

Annex 2: Epidemiological Investigation Form No.2

The College of Medicine's COVID-19 Confirmed Cases Reporting Form

Date of filling this form: / / Time: :

Please answer all the following questions. This form is used for official purposes only.

No	Questions	Answers
1.	Name:	
2.	University employee/student No.	
3.	What is your job at the College of Medicine?	☐ Student ☐ Employee ☐ Faculty ☐ Worker ☐ Others
4.	Do you have a positive test for COVID-19?	☐ Yes * ☐ No
5.	Where did you do the test?	
6.	Mobile Number:	
7.	When were you tested for COVID-19?	
8.	When was the test result received?	
9.	Did you have any symptoms of the disease?	☐ No ☐ Yes. The symptoms:
10.	When did you start feeling symptoms of the disease?	
11.	When was your last college attendance?	
12.	Where were you in your last attendance in the college?	
13.	With whom were you in close contact (less than two meters distance for 15 minutes duration) during the last visit to the College of Medicine?	

I hereby confirm that the information provided herein is accurate. And in case any information given proves to be incorrect, I shall be responsible for the consequences.

Name: Signature:

* It is required to provide the college with a documentation of the positive test or any other needed documents.

Annex 3: Epidemiological Investigation Form No.3

The College of Medicine's COVID-19 Contact Cases Reporting Form

Date of filling this form: / / Time: :

Please answer all the following questions. This form is used for official purposes only.

NO	Questions	Answers
1.	Name:	
2.	University employee/student No.	
3.	What is your job at the College of Medicine?	☐ Student ☐ Employee ☐ Faculty ☐ Worker ☐ Others
4.	Mobile Number:	
5.	Name of the COVID-19 confirmed case: *	
6.	What is your relation to the COVID-19 confirmed case?	
7.	Were you in a close contact (less than two meters distance for 15 minutes duration) with the COVID-19 confirmed case?	☐ Yes ☐ No
8.	When was the contact with the COVID-19 confirmed case?	- Day: - Date: - Time:
9.	Where was the location when you contacted the COVID-19 confirmed case?	
10.	Did you develop any symptoms since the contact?	☐ No ☐ Yes. The symptoms:
11.	If you have visited the college after the contact, mention those whom you were in close contact with (less than two meters for more than 15 minutes)	
12.	Did you do the COVID-19 testing since contact with the positive case?	☐ No ☐ Yes: Test date: Test center: Test result**:

I hereby confirm that the information provided herein is accurate. And in case any information given proves to be incorrect, I shall be responsible for the consequences.

Name: Signature

* It is required to provide the college with a documentation of the positive test of the confirmed case or any other needed documents.

** Please, provide the college with a documentation of your test result, if performed.

grouped by academic years and institutional categories for analysis. For age-group analysis, institutional categories serve as a proxy, since students in the same category are roughly the same age. We then conducted analyses by institutional categories and gender.

Data was analyzed using SPSS 26. Descriptive statistics summarized counts and proportions. Inferential analysis, using chi-square tests or Fisher's exact test, was used to compare confirmed and contact cases across years and categories. Trend analysis employed regression over the years. Relative risks with 95% confidence intervals (CIs) were calculated for pairwise comparison. Records with incomplete data were excluded; no imputation was performed. Duplicates were merged before statistical analysis. Two-sided $p < 0.05$ was considered significant.

Results

Of the 1,396 targetted individuals over three years, there were 37 (2.65%) confirmed cases and 48 (3.44%) contact cases. In 2020-21, of the 430 targetted individuals, there were 25 (5.81%)

confirmed cases and 42 (9.77%) contact cases. In 2021-22, the rates decreased to 9 (1.96%) and 5 (1.09%) out of 460 targetted individuals, and further declined to 3 (0.59%) and 1 (0.20%) in 2022-23 out of 506 individuals. (Table 1).

Highest confirmed case rates were observed in Year Five and Year Four students and among college staff, while contact burden was highest in Year Two and Year Three students (Table 2).

In 2020-21, among 349 students, there were 21 (6%) confirmed cases and 36 (10.3%) contact cases. In 2021-22, among 379 students, there were 5 (1.3%) confirmed cases and 3 (0.8%) contact cases. In 2022-23, among 419 students, there were 2 confirmed cases (0.5%) and 1 contact case (0.2%). The contact tracing burden per case dropped from 1.7 contacts in 2020-21 to 0.6 in 2021-22 and to 0.5 in 2022-23. Category totals revealed uneven burdens of confirmed and contact cases (see Table 3), indicating that the surveillance burden was greatest at the start and declined over time. However, exposure burden remained

Table-1: Academic year distribution of targetted individuals, confirmed cases and contact cases.

Academic year	Targeted n	Confirmed n (%)	Contact n (%)
2020-2021	430	25 (5.81)	42 (9.77)
2021-2022	460	9 (1.96)	5 (1.09)
2022-2023	506	3 (0.59)	1 (0.2)

Table-2: Institutional category distribution of targetted individuals, confirmed cases and contact cases.

Category	Targeted n	Confirmed n (%)	Contact n (%)
College Staff	249	9 (3.61)	8 (3.21)
Year Five	122	6 (4.92)	4 (3.28)
Year Four	157	7 (4.46)	3 (1.91)
Year One	300	3 (1.0)	1 (0.3)
Year Six	105	2 (1.9)	1 (0.95)
Year Three	207	5 (2.42)	10 (4.83)
Year Two	256	5 (1.95)	21 (8.2)

Table-3: Positivity rate and contact burden among the students by academic year and category totals.

Stratum	Targeted individuals, n	Confirmed cases, n	Positivity rate, %	Contact cases, n	Contact burden, %	Contacts per confirmed case
Academic year totals						
2020-2021	349	21	6.0	36	10.3	1.7
2021-2022	379	5	1.3	3	0.8	0.6
2022-2023	419	2	0.5	1	0.2	0.5
Category totals across study period						
Year One	300	3	1.0	1	0.3	0.3
Year Two	256	5	2.0	21	8.2	4.2
Year Three	207	5	2.4	10	4.8	2.0
Year Four	157	7	4.5	3	1.9	0.4
Year Five	122	6	4.9	4	3.3	0.7
Year Six	105	2	1.9	1	1.0	0.5
Study-period total	1147	28	2.4	40	3.5	1.4

The positivity rate was calculated as the number of confirmed cases divided by the number of targetted students in each stratum. Contact burden was calculated as the number of contact cases divided by the number of targetted students. Contacts per confirmed case were used as an operational indicator of contact tracing burden.

higher among students in Years Two and Three. This pattern is supported by the data: Year Five students had the highest positivity rate at 4.9% (6/122), followed by Year Four at 4.5% (7/157). Contact burden was highest in Year Two at 8.2% (21/256), then in Year Three at 4.8% (10/207). The average number of contacts per case was highest in Year Two (4.2) and Year Three (2.0).

Targetted individuals are mostly College Staff and Year One. Confirmed cases peak in Year Four (18.9%) and among Staff (24.3%). Contact cases are mainly in Year Two (43.8%) and are male-driven (91.7%). Female cases drop to zero in

Table-4: Inferential summary and pairwise year comparisons.

Comparison	Statistic
Academic Year - Confirmed	Chi square=25.84, df=2, p=0.0
Academic Year - Contact	Chi square=75.54, df=2, p=0.0
Category - Confirmed	Chi square=9.24, df=6, p=0.1606
Category - Contact	Chi square=30.53, df=6, p=0.0
2020-2021 vs 2021-2022 - Confirmed	RR 2.97 (1.4-6.29), p=0.0028
2020-2021 vs 2021-2022 - Contact	RR 8.99 (3.59-22.5), p=0.0
2020-2021 vs 2022-2023 - Confirmed	RR 9.81 (2.98-32.25), p=0.0
2020-2021 vs 2022-2023 - Contact	RR 49.42 (6.83-357.6), p=0.0
2021-2022 vs 2022-2023 - Confirmed	RR 3.3 (0.9-12.12), p=0.0791
2021-2022 vs 2022-2023 - Contact	RR 5.5 (0.64-46.9), p=0.1083

Table-5: Inferential summary and pairwise year comparisons.

Category	2020-2021 n (%)	2021-2022 n (%)	2022-2023 n (%)
College Staff	10/81 (12.35)	6/81 (7.41)	1/87 (1.15)
Year One	4/103 (3.88)	0/97 (0.00)	0/100 (0.00)
Year Two	26/82 (31.71)	0/79 (0.00)	0/95 (0.00)
Year Three	15/55 (27.27)	0/85 (0.00)	0/67 (0.00)
Year Four	7/41 (17.07)	0/42 (0.00)	3/74 (4.05)
Year Five	2/36 (5.56)	8/42 (19.05)	0/44 (0.00)
Year Six	3/32 (9.38)	0/34 (0.00)	0/39 (0.00)

Overall, by academic year: 67/430 (15.58%) in 2020-2021, 14/460 (3.04%) in 2021-2022, and 4/506 (0.79%) in 2022-2023.

higher years, except among Staff. A chart visualizing age and gender analysis is shown in Figure 2.

There were significant annual differences in confirmed and contact burdens. Category differences appeared only for contact burden. The 2020-21 academic year had higher burdens, while the differences between 2021-22 and 2022-23 were not significant (Table 4).

Using confirmed and contact cases as proxies for quarantine-related burden, the number and rate of quarantined individuals decreased over the study period. Overall, 67(15.58%) of 430 targeted in 2020-21 were affected compared to 14(3.04%) of 460 in 2021-22 and 4(0.79%) of 506 in 2022-23. In 2020-21, the highest rates were in Year Two at 31.71% (26/82), Year Three at 27.27% (15/55), Year Four at 17.07% (7/41), and college staff at 12.35% (10/81). In 2021-22, the burden shifted mainly to Year Five at 19.05% (8/42) and college staff at 7.41% (6/81),

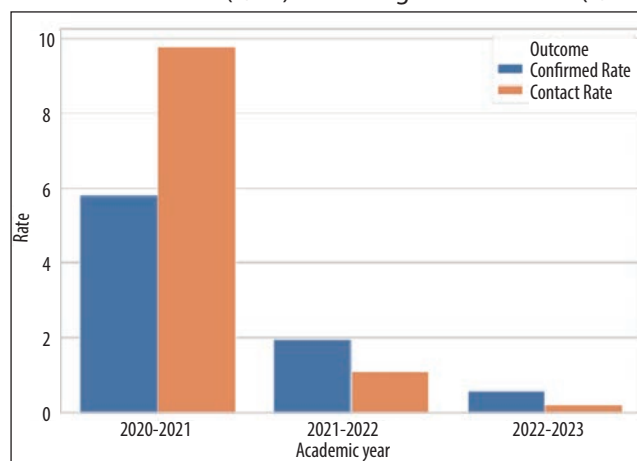


Figure-1: Confirmed-case and contact-case rates by academic year.

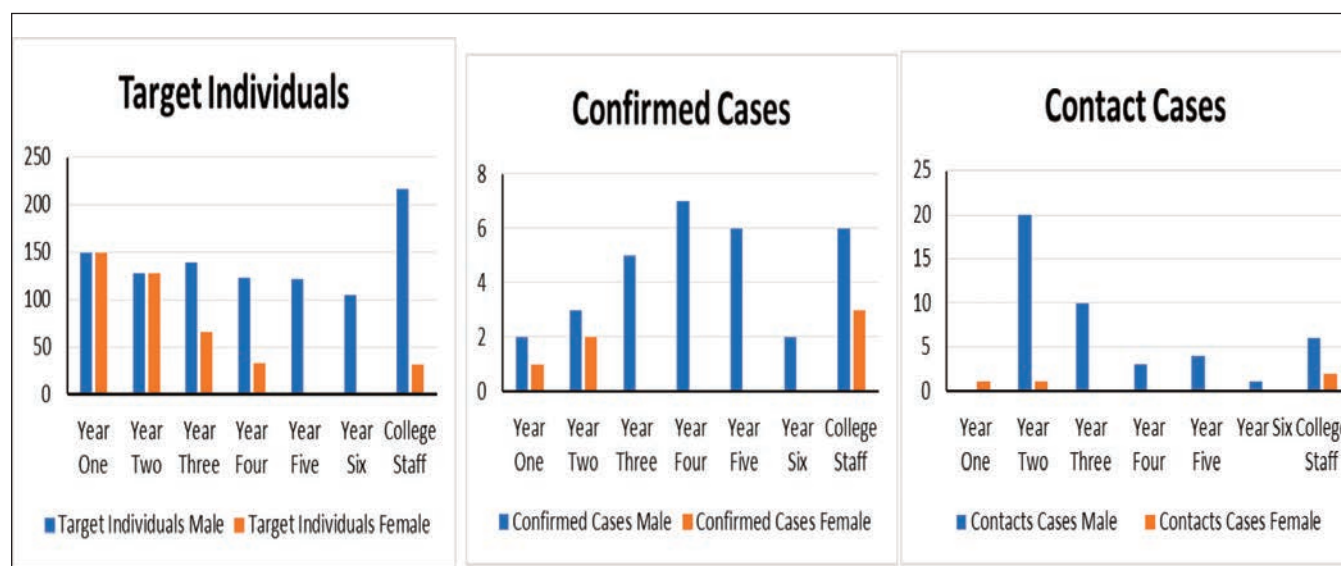


Figure-2: Targetted individual, confirmed-case, and contact-case rates by category and gender.

with no other categories affected. In 2022-23, only 4 proxy quarantine events were recorded — three in Year Four (4.05%) and one among college staff (1.15%) — indicating a significant decline (Table 5).

The surveillance recorded a total of 81 events; 34(41.98%) confirmed and 47(58.02%) contact cases, estimated to cause 405-1,134 academic disruption days, with a central estimate of 810 days, assuming 10 days per event. Most disruption occurred in 2020-21 (67 events, ~670 days), fewer in 2021-22 (14 events, ~140 days), and none in 2022-23. These figures are estimates based on scenario data, not actual missed days; i.e., they are theoretical estimates. The researcher didn't track the actual number of days missed by students or staff. Instead, he multiplied the number of recorded cases by a standard 10-day isolation period to estimate the potential impact.

Discussion

The COVID-19 surveillance system at UBCOM demonstrated strong adaptability and engaged staff, faculty, and students despite limited experience with formal infectious disease monitoring.^{10,11,17} Effective surveillance requires clear objectives, standardized definitions, timely reporting, and data use to inform public health decisions.^{10,11,17,18} The college shifted from routine to high-alert surveillance in response to COVID-19 guidance, including case detection, contact tracing, isolation, and prevention.^{9,19,20} Saudi Arabia's prior epidemic and pandemic planning likely facilitated this transition.²¹⁻²³ Over three years, confirmed cases and contact burdens decreased, aligning with literature showing how transmission diminishes when preventive measures, awareness, testing, tracing, vaccination, and public health efforts are intensified.^{7,8,18,21-23} This decline may be attributed to reduced community spread and improved prevention practices. The greater variability in contact burdens across categories reflects differences in exposure opportunities, even during low infection levels. Surveillance should go beyond infection monitoring to include exposure risk assessment, enabling targeted prevention.^{10,11,17,18,24,25} From 2020-21 to 2022-23, the COVID-19 workload among students declined significantly, with steady decreases in positivity and contact efforts. Positivity rates declined from 6.6% to 0.5%, contact burdens from 10.3% to 0.2%, and contacts per case from 1.7 to approximately 0.5. These trends indicate improvements in prevention, awareness, early detection, and public health policies. Surveillance patterns differed by category: Years Five and Four had the highest positivity rates, while Years Two and Three showed the highest contact burdens and contacts per case, suggesting varying exposure and tracing needs across academic levels. Overall,

data revealed a decreasing COVID-19 burden and category-specific exposure trends, offering insights for targeted prevention. The reduction in quarantine cases points to fewer infections and better control, though some variability persisted—with higher cases in 2020-21 due to clustered contacts or compliance issues—and risks evolved over time. By 2022-23, quarantine cases nearly vanished, minimizing disruptions. These findings emphasize the importance of ongoing targeted surveillance and prevention efforts. The study documented a significant decline in confirmed and contact COVID-19 cases over three years, likely driven by infection prevention, administrative coordination, and surveillance efforts. These results suggest that sustained institutional strategies can effectively reduce transmission and case numbers in educational settings. The decrease in cases indicates better infection control; however, since these are based on aggregated data, these trends should be seen as indicative rather than definitive proof of causation. Future research using individual- or comparative data could clarify the specific impact of control measures. Comparing our data with other surveillance records reveals patterns in infection, transmission, and exposure over time.^{10,11,18,24,26} This study underscores how surveillance data offer a practical view of COVID-19's evolving impact and identify groups with higher contact rates. It highlights the importance of workplace surveillance for local public health, especially in medical colleges where balancing academic and clinical training with infection prevention is critical. A key challenge was individuals' reluctance to isolate due to fears of missing classes, reflecting the dilemma between controlling infection and maintaining educational continuity, especially in medical training, where classroom, practical, and clinical experiences are essential.^{3,4,7} Ignoring isolation and reporting rules can weaken surveillance by delaying case detection, hindering contact tracing, and increasing transmission risks.¹⁷⁻²⁰ To address this, the college enhanced contact tracing through direct inquiries and adopted proximity-based exposure criteria aligned with Saudi and international standards.^{9,19,20} These measures are vital because effective surveillance depends on operational procedures for case detection, exposure assessment, and follow-up. The findings emphasize the importance of strong leadership and clear reporting channels. Reports from Saudi Arabia indicate that effective leadership, coordinated efforts, and infection control were key to the COVID-19 response.^{12,21-23} The UBCOM experience demonstrates how local surveillance systems can strengthen public health initiatives.

Conclusion

The COVID-19 burden declined from 2020-21 to 2022-23, with notable differences in cases and contacts. The

surveillance system was vital for early detection, contact tracing and continuity of education during disruptions. Ongoing prevention and improved surveillance are recommended to detect outbreaks faster, protect staff and students, and ensure service continuity. Data showed lower positivity and contact rates, with higher confirmed cases in Years Four and Five and higher contacts in Years Two and Three, highlighting the importance of surveillance to track trends and identify high-risk groups. Enhancing these systems can bolster outbreak management by improving preparedness, directing mitigation strategies and enhancing responses to future infectious diseases. UBCOM's experience shows that a medical college can develop an effective surveillance system during a health crisis, providing valuable lessons.

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Author Contribution:

IAEI: Concept, design, data acquisition, analysis, interpretation, drafting, revision, final approval and agreement to be accountable for all aspects of the work.