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Abstract Book

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Approaches to Combat COVID-19 in Low- and Middle-Income Countries Workshop 2022

Abstracts

Oral Presentation

O#1

Viral dynamics and factors favouring the duration of covid-19 positivity: Evidence from the first-three epidemiological waves in Cameroon

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Background: Evidence on the evolution of Coronavirus disease 2019 (COVID-19) and time for viral clearance remains limited in tropical settings. Thus, understanding the local COVID-19 epidemiological dynamics and the time to viral clearance are key indicators to set-up public health control measures for planning clinical management and for timing of isolation/confinement at community-level. Our objective was to evaluate the viral dynamics of SARS-CoV-2 infection and factors associated with positivity duration in COVID-19 cases in Cameroon.

Material and Methods: A prospective cohort-study was conducted among people diagnosed positive to SARS-CoV-2 from the first-to-third wave (March 2020- September 2020; October 2020-May 2021 and June 2021- October 2021) at the Chantal Biya International Reference Centre in Yaoundé, Cameroon. RT-PCR was performed on nasopharyngeal swabs using Abbott m2000sp or DaAN Gene systems. SARS-CoV-2 positivity duration was evaluated from the first to the last positive test before negativity. Epi-info V.7.0 and Graph pad V.6 were used for data analyses with $p<0.05$ considered statistically significant.

Results: A total of 282 participants were enrolled, mean age 41±14 years, with male predominance (62.1%). Regarding symptoms, 15.6% were symptomatic with cough being the most common symptom (59.09%). Overall, the median duration of positivity was 15 [IQR: 9-23] days, the lowest duration observed in the third wave (8 [IQR: 4-12]), p= 0.007. Positivity duration was significantly higher in males (16 vs. 14 days, p=0.03) and people aged >40 years (15 vs. 14 days, p=0.02). Positivity duration was not affected by presence or absence of symptoms (p=0.80), and no significant correlation was found with viral load (r=0.03; p=0.61). Of relevance, considering baseline (24.7±7.2Ct) and last viral load (29.3±5.9 Ct), the ΔCt (4.6±1.3) and positivity duration (15 days) revealed a kinetic in viral decay of 0.3±0.087 Ct/day.

Conclusions: Experience from the first- to the third-wave of COVID-19 pandemic in Cameroon highlights a median duration of positivity of about 15 days, supporting a viral clearance around 2 weeks for optimal confinement at community-level. However, men and/or the elderly stand at higher risk of prolonged infection. For personalised monitoring, the viral decay (0.3 Ct daily) suggests specific confinement period according to individual baseline viremia. The median positivity duration trend increased from the first to second and decreased from second to third wave, predicting lower median durations for the next strain.

Key words: SARS-CoV-2, Positivity duration, determinants, viral dynamics

O#2

Frontline Health Care and Service Providers during COVID-19 in Bangladesh: Some Alarming Experiences

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Background: Health Care Workers (HCW) are at the frontline of COVID-19 are exposed to hazards that put their lives at risk. They experience an unusual fear and anxiety on physical and mental health and concerns about transmitting the disease to family members. Also experience a constant sense of intense fear, stigmatization, harassment and violence when treating patients in facilities since the beginning of this pandemic.

Objective: The study explores the scope of the problem and to design interventions to prevent and respond to the occurrences.

Methodology: A total of 93 doctors and 30 nurses working in three major public hospitals and one private hospital in Dhaka city dealing COVID-cases for at least three months were interviewed through a semi-structured questionnaire during July to August 2021. Information was collected on incidences and types of assaults in the context of the COVID-19 pandemic.

Key findings: Almost all doctors and nurses faced some kind of harassment and discrimination, mostly in the early-pandemic period. More than 64% percent faced verbal assaults or threats, 35% were incidents of fear-based discrimination, 09% involved physical assaults. In some sceneries, fear, panic, misinformation about how COVID can spread, and exploded misplaced anger towards doctors and nurses. Higher management was found reluctant to any effective responses or taking action against assailants, nor addressing root causes.

Discussion: Literature in this matter is still inadequate, figure reflects only the known cases, the actual figure is likely much higher. COVID-19 caused highest death rate of doctors in Bangladesh, as published in different local media and international media, however frightful incidences like assaults and stigmatization are unrecorded and unreported. There is an urgent need to exercise "zero tolerance" concerning violence against HCWs and to care for the wellbeing to prevent serious consequences for patients and a possible collapse in our health system as the country fights COVID-19.

O#3

SARS-CoV-2 Genomic Surveillance and Reliability of PCR Point Mutation Assay (EscapePLEX kit) for the Rapid Detection of Variants of Concern in Cameroon

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Background: To inform decision-making for COVID-19 response, surveillance of SARS-CoV-2 variants of concern (VOC) and lineages is crucial. Though genomic sequencing is the gold standard, point mutation PCR is recommended for rapid surveillance of VOCs. We sought to study the dynamics of SARS-CoV-2 strains across different waves and to evaluate the reliability of SNP EscapePLEX kit for the rapid detection of VOC.
Methods: A laboratory-based study was conducted on SARS-CoV-2 positive nasopharyngeal specimens (Ct-value<30) at the Chantal BIYA International Reference Centre in Yaoundé, Cameroon, between April 2020-August 2022. For each sample, Sanger-sequencing and SNP-EscapePLEX kit were performed, using sequencing as gold standard to evaluate the performance of SNP-EscapePLEX.

Results: Of the 130 specimens (from individuals with median [IQR] age 38 [29-49], 53% female; 26% symptomatic); the dynamic of SARS-CoV-2 during wave-1 (April-November 2020) showed 97% (30/31) wild-type lineages and 3% (1/31) Gamma-variant; wave-2 (December 2020-May 2021) showed 25% (4/16) Alpha-variant, 25% (4/16) Beta-variant, 44% (7/16) wild-type lineages and 6% (1/16) mu; wave-3 (June-October 2021) showed 93% (27/29) Delta-variant, 3.5% (1/29) Alpha-variant, 3.5% (1/29) wild-type lineages; wave-4 (November 2021-August 2022) showed 98% (53/54) Omicron-variant and 2% (1/54) Delta-variant. Omicron sub-variants were 47% (25/53) BA.1, 34% (18/53) BA.5, 13%(7/53) BA.2 and 6% (3/53) BA.4. Overall sensibility and specificity of SNP-Escaplex was 84%[78-87] and 89%[76-95] respectively. Specifically, the sensitivity and specificity of SNP-Escaplex on Delta-variant was 75%[63-76] and 100%[96-100] respectively; the sensitivity and specificity of SNP-Escaplex on Omicron-variants was 96%[90-96] and 100%[93-100] respectively, without the ability in discriminating omicron sub-variants.

Conclusion: Genomic surveillance reveals a rapid dynamic in SARS-CoV-2 strains, moving from wild-type lineages to Omicron variants and sub-variants. For rapid variant surveillance in resource-limited settings, EscapePLEX kit represents a suitable alternative to genotyping. However, this point PCR assay needs to be upgraded for the surveillance of sub-lineages of concern under monitoring.

O#4

Viral co-infection with human respiratory syncytial virus in suspected acute and severe respiratory tract infections during COVID-19 pandemic in Yaoundé-Cameroon, 2020-2021

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Background: Acute lower respiratory tract infections (ALRI) are one leading cause of morbidity and mortality among people of all ages worldwide, particularly in low- and middle-income countries (LMICs). The purpose of this study was to determine epidemiological characteristics of respiratory viruses in ARI patients during the SARS-CoV-2 pandemic in Yaoundé, Cameroon.

Methods: Patients were monitored for respiratory symptoms as part of surveillance of SARS-CoV-2 and other respiratory viral infections. Patients of all ages with respiratory symptoms less than 5 days were considered. Sociodemographic and clinical data as well as nasopharyngeal samples was collected from patients. Nasopharyngeal samples were tested for SARS-CoV-2, Influenza and Respiratory Syncytial Virus (RSV) using real-time reverse-transcription polymerase chain reaction methods. Virus distribution and demographic data were analyzed with R version 2.15.1.

Results: From July 2020 to October 2021, 1120 patients were included. The overall viral detection rate was 32.5%, including 9.5 % for RSV (Respiratory Syncytial Virus), 12.6 % for influenza virus and 12.8 % for SARS-CoV-2 (Severe Acute Respiratory Syndrome Coronavirus 2). Co-infections were detected in 6.9% of positive cases. While RSV and influenza virus showed seasonal trends, SARS-CoV-2 was detected throughout the study period.

Conclusion: We found that during SARS-CoV-2 pandemic, respiratory viruses play an important role in aetiology of influenza-like illness in Cameroon, and this observation was true for patients of all ages.

O#5

High seroprevalence of anti-SARS-CoV-2 antibodies in the capital city of Chad

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Background: Since the start of the COVID-19 pandemic, Chad has had 7,417 confirmed cases and 193 deaths, one of the lowest in Africa.
Objective. This study assessed SARS-CoV-2 immunity in N'Djamena.

Methods: In August-October 2021, eleven N'Djamena hospitals collected outpatient data and samples. IgG antibodies against SARS-CoV-2 nucleocapsid protein were identified using ELISA. "Bambino Gesù" Laboratory in Rome performed external quality control with chemiluminescence assay.

Results: Participants' average age was 31.9±12.6 years, with 25- 34-year-old (35.2%) being the most represented group. 56.4% were women, making the ratio of women/men 1.3. The 7th district participants made up 22.5% and the 1st district 22.3%. Most were housewives and students. Overall seroprevalence was 69.5% (95% CI: 67.7-71.3), females 68.2% (95% CI: 65.8-70.5) and males 71.2% (95% CI: 68.6-73.8). >44-year-old had the highest seroprevalence (73.9%). Under-15s had a 57.4% positivity rate. Civil servants (71.5%), housewives (70.9%), and health personnel (9.7%) had the highest antibody positivity. The 9th district of N'Djamena had 73.1% positivity, while the 3rd district had 52.5%. The Good Samaritan Hospital (75.4%) and the National General Referral Hospital (74.7%) had the highest seroprevalences.
Conclusion. Our findings indicate a high circulation of SARS-CoV-2 in N'Djamena, despite low mortality and morbidity after the first two COVID-19 pandemic waves. This high seroprevalence must be considered in Chad's vaccine policy.

Approaches to Combat COVID-19 in Low- and Middle-Income Countries Workshop 2022

Abstracts

Poster Presentation

P#1

Exploring community rumours and misinformation about COVID-19 vaccines among adults in South Africa

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Background: Low- and middle-income countries (LMICs) have increasingly higher levels of COVID-19 vaccine hesitancy and misinformation spreading through community rumors. Social media may exacerbate the problem of low vaccination uptake in LMICs. The Vaccine Information Network (VIN) was a rapid pilot study that explored vaccine misinformation and rumors and their sources in South Africa (SA).

Methods: Eligible participants were 18 years and older and were enrolled in 12 focus group discussions (FGDs) (FGDs: 6 in Gauteng, 6 in Western Cape). FGDs were stratified by the age groups (18-34, 35-49 and ≥50 years) and vaccination status. Interviewers used a semi-structured interview to facilitate discussion on barriers and facilitators of, community perceptions about COVID-19 vaccine. FGDs were audio-recorded, transcribed into English for thematic data analysis. Descriptive statistics such as proportions and median summarized quantitative data.

Results: Of the 81 participants in the FGDs, 69.1% (n=56) were female and 80.2% (n=65) participants were of Black/African race with a median age of 40 years. More than 74% (n=4) completed secondary school and 76.5% (n=62) were unemployed and 54.3% (n=44) unvaccinated.

Findings revealed misinformation and community rumours in South Africa, across all age groups, and among vaccinated and unvaccinated groups. Most participants were afraid of vaccines because of rumours and misconceptions about perceived dangers of vaccines spreading on social media. Rumours around COVID-19 and vaccines spread through community hearsay and social media were believed to be true. In both countries, rumours in the community included: deaths perceived to be caused by COVID-19 vaccinations; that vaccines will cause birth defects during pregnancy, infertility, impotence and reduced sexual pleasure in men. In South Africa, there was mistrust driven by conspiracy theories that the government is collaborating with pharmaceutical companies to manufacture the COVID-19 virus for commercial profiteering. Participants across all age groups reported that the vaccine is a human tracker created to reduce the population. Unvaccinated participants stated that governments were allowing pharmaceutical companies to treat Africans as 'guinea pigs', by allowing vaccines still being trialled to be tested in Africa.

Conclusions: Rumours and conspiracy theories led to vaccine hesitancy in participants across all age groups. Data shows that the distrust of the vaccine may be based on misinformation through rumours on social media. Increasing vaccine confidence in LMICs is crucial through amplifying knowledge about vaccines, through the provision of consistent information via trusted sources and channels and development of an effective communication strategy for COVID-19 vaccine uptake

P#2

Behavioral Intervention for PLWHA with Ambivalent Attitudes towards the COVID-19 Vaccine

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Background: The COVID-19 vaccination program was made available in Romania first to vulnerable and at-risk groups in specific state-run centers, where people could get an appointment and receive the shot. PLWHA (people living with HIV/AIDS) represents such a group, and in the context of widespread misinformation and debate about the need for vaccination, our team took a proactive approach to assess vaccination levels and intentions among unvaccinated. In this respect, a nurse has telephonically contacted patients in our care. Those who said they intended to get vaccination were referred to the psychosocial team for personalized counseling.

Methods: In September-December 2021, 99 PLWHA who declared ambivalent or unprepared to take the vaccine were offered one online (56%) counseling session or in-person. Patients were asked about their intention to get vaccinated on a scale from 1 to 10 at the beginning of the session and again at the end. The vaccination status was recorded in the database three months after the counseling. The team could use in any combination one or more of the following five behavior change techniques (BCTs): information about health consequences, credible sources, comparative imagining of future outcomes, anticipated regret, and action planning.

Results: Out of the 99 PLWHA at the end of the evaluation, 49 reported they took the vaccine. For the entire group, the intention to get vaccinated increased by 3.42 points (t= -8.87, p< .05). There was a 3.22-point increase for the group that did not vaccinate at the follow-up evaluation (t= -7.05, p<.05); and 4.09 increase for PLWHA who did vaccinate (-5.41, p<.05).
Overall, the persons in the unvaccinated group started with a significantly lower intention at the beginning of the session than those who eventually got the shot. Significantly more BCTs were used for the PLWHA who did not take the vaccine than those who accepted it (F=5.95, sig=.003).

Conclusions: Our experience shows that change is possible among ambivalent patients, even during one session. The selected BCTs have helped approximately 50% of the patients we reached out to take the steps necessary to receive the COVID vaccine, while the ones who did not yet act reported a higher intention at the end of the intervention. The baseline intention could indicate the necessary number of follow-up sessions. The set of BCTs that would need to be used for the next interventions must be defined further.

P#3

Have Attitudes of PLWHA Enrolled at Baylor Black Sea Foundation towards the COVID-19 Vaccination Changed over Time?

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Background: PLWHA (people living with HIV/AIDS) is one of the groups with higher COVID-19-associated risks. As part of our COVID response, our team set up a screening process to establish vaccination rates and understand patients' motivation, attitudes, and intentions towards vaccination.

Methods: We have distributed via bulk SMS self-report assessments in August and November 2021 to all PLWHAs with a valid phone number in our database. Responses were anonymous and processed using SPSS through descriptive association methods and chi-squared distribution. Between the two assessments, the psychosocial team unfolded tailored interventions regarding vaccination for the beneficiaries who declared ambivalence towards taking the vaccine, and the communication team distributed videos and infographics about vaccination to all patients.

Results: The survey has been sent to 642 BBSF beneficiaries; the initial assessment received 135 responses (21,02%), and the second one 149. The average age of respondents was 34, and 46,5% were women. Following the first assessment, 41% of the respondents agreed to participate in a tailored counseling session about vaccination with a psychologist or a social worker. Patients rated the quality of the session as satisfying (the average rating was 4 out of 5).
Comparing assessments, we noted that the percentage of patients who initially responded to be unvaccinated decreased from 51% to 30%, while those who took the vaccine increased from 41% to 61%.
The patients who refused vaccination motivated their choice by fear of the vaccine (54,65%), conviction that COVID-19 is not a critical illness (21%), belief in the impossibility of getting infected (7%) or delaying the moment (6%).
Those who took the vaccine explained their decision by wanting to prevent the illness (57%), wishing to work or travel (21,6%), or fearing transmitting the infection to their families (9,8%).
PLWHA who intend to get vaccinated responded that they fear developing a severe form of COVID-19 (42,1%), wish to work or travel (24,6%), fear transmitting the disease to a family member (17,5%), or have seen a close person infected with COVID suffering (3%).

Conclusions: Over 3 months, the number of vaccinated PLWHA in Constanta county has increased by 20%. Understanding the motivation behind taking the vaccine into account or avoiding it made tailoring interventions and the communication strategy possible around this subject. Although not every patient was vaccinated due to individual counseling, interventions were appreciated by beneficiaries as being helpful.
Psychologists' reports show that 50% of unvaccinated people who were assisted in counseling declared after 3 months, they were vaccinated. The positive outcome of behavioral changing interventions cannot be isolated from the changes in the context (restrictions, pandemic wave, the green certificate, etc.) and the broader sensitization campaign we have unfolded. Nevertheless, change is possible, and refreshment sessions could be considered for the next vaccination campaigns

P#4

Knowledge and acceptance of COVID-19 vaccine: a community-based cross-sectional study among residents of Jinja District Eastern Uganda.

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Background: Despite of the existence of other public health interventions, vaccination remains a cornerstone in the fight against pandemics. Our study aim is to evaluate Jinja District residents' COVID-19 vaccine knowledge and acceptance.
Tool and Method: A sample size of 210 participants selected by 30*7 cluster sampling method was used in this descriptive-cross sectional study. Data collection was done by the use of a self-structured questionnaire.
Results: 45.2% of our participants had adequate level of knowledge with a 56.2% COVID-19 vaccine acceptability rate. Highly educated participants were most likely to have adequate knowledge of COVID-19 vaccine than the lowly educated ones (OR= 2.64; 95% CI; 1.32-5.26, P= 0.006). Having a high level of education (OR=2.7; 95% CI; 1.38-5.10, P= 0.004) was significantly associated with vaccine acceptability. The main reason for not accepting to get vaccinated by our study participants is that vaccination towards COVID-19 is un necessary.

Conclusion: The low level of adequate knowledge and acceptability indicate the need for creation of more public awareness campaigns on COVID-19 vaccination.

P#5

SEROPREVALENCE OF SARS-CoV-2 ANTIBODIES IN THE CATHOLIC UNIVERSITY OF CENTRAL AFRICA-SCHOOL OF HEALTH SCIENCES AT MESSA-YAOUNDE

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Background: The epidemic of the novel Coronavirus caused by SARS-CoV-2 has rapidly spread all over the world and has given rise to a worldwide pandemic. In Cameroon on the 18th of March 2020, the government implemented some restrictive measures such as (1) the obligatory wearing of face mask, (2) the systematic washing of hands and (3) the lock down of schools and universities. Furthermore, according to the Ministry of Public Health, the SARS-CoV-2 had never stopped circulating since its official entry in March 2020 in our country and Yaoundé especially, being one of the hotspots of this disease. It is in this context that we proposed to evaluate the seroprevalence of SARS-CoV-2 antibodies within the university community of catholic university of central Africa.

Methods: We carried out a descriptive cross sectional study from the 19th of April till the 15th of May 2021 in the campus of the school of health sciences. Therefor Ninety-two blood samples were collected from the university community members (students, lecturers, staff…). SARS-CoV-2 specific antibodies (IgG and IgM) were detected by Lateral Flow Immuno-Assay (PanbioTM COVID-19 IgG/ IgM combo Rapid Test Device and by ELISA assay (RUN MEI SARS-CoV-2(COVID-19) IgG Antibody Detection Kit). Statistical analysis was carried out using EXCEL, EPI INFO version 7.0 and IBM SPSS VERSION 28.0.

Results: The mean age of the studied population was 24±5 years with female predominance (sex ratio 2.3). Majority of our participants were students 88/92 (96%) from the class of 3rd year of Medical Laboratory Sciences 19/92 (20.65%). Our overall prevalence of antibodies was 86.13 % (CI: 79.067% - 93.193%) using either or both RDT and ELISA. Using RDT, IgM antibodies seropositivity rate was 9.78% (CI: 4.57% - 17.76%) while IgG seropositivity rate was 27.17% (CI: 18.42% - 37.45%). Using our ELISA IgG detection kit, we obtained a seropositivity rate of 79.34%(CI: 69.64% - 87.08%).

Conclusion: This high seropositivity suggests high exposure to the SARS-CoV-2 virus despite the part-time online classes organization, and can possibly being explained by the high disease burden following the second outbreak in January 2021 in our country.

P#6

Exploring the effectiveness of Ghana's COVID-19 policy responses

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Background: In 2020/21, Ghana implemented several COVID-19 policy responses in a bit to mitigate the impact of the virus. Therefore, this study aimed to contribute to understanding the influence of these policies against their set objectives. Such understanding could inform the development of effective interventions to alleviate the long-term burden of the virus and any potential outbreaks like COVID-19.

Methods: A deep-dive approach, using the search terms: 'COVID-19', 'coronavirus' 'policy*', 'mitigating policy*', 'policy response*', and 'Ghana', was used to access archival data on Ghana's COVID-19 policies. A qualitative content analysis was then conducted to identify and synthesise data on the policies' objectives and their intended and actual outcomes. After, the logic model was used to map the objectives and intended outcomes of the policies to their actual outcomes. Following the mapping, a 3-score (0 – 2) valuation measure was used to estimate the policy's effectiveness. In the valuation, '0' meant an ineffective policy, and '2' suggested an effective policy.

Results: The identified policies included partial lockdowns in two major cities, nationwide public awareness campaigns, bans on public gatherings, travel restrictions & border closures, compulsory

COVID-19 entry border screening, Coronavirus Alleviation Program (CAP) and government incentives for Healthcare Workers (HCW). The policy mapping and analysis showed that the awareness campaigns, HCW incentives, travel restrictions & border closures and compulsory entry screening were effective in lessening the burden of COVID-19 during their imposition. However, it also highlighted poor policy enforcement and socio-political and economic challenges as hindrances to the functioning of some of Ghana's COVID responses.

Conclusion: Some of Ghana's 2020/21 COVID-19 policies and their outcomes, like awareness campaigns, could be a model to inform forethought interventions for potential future outbreaks, like pathogen X. However, it may be prudent for Ghana's policymakers to strengthen their policy enforcement regulations to ensure the full potential of future policies. They must also ensure that these policies suit their socio-political context.

P#7

Impact of COVID-19 pandemic on the physical health of School of Healthcare Science students at a selected tertiary institution in Gauteng

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COVID-19 is an infectious virus that spreads via respiratory droplets. In efforts to curb the spread of disease, lockdowns were implemented worldwide. These lockdowns affected academic institutions, and a shift to online classes was implemented for the School of Healthcare Science students. Activities of daily living were adjusted and resulted in changes in physical health. This study established the impact COVID-19 had on the physical health of 78 students at a selected Higher Education Institution (HEI) in Gauteng, South Africa (Ethics number: 614/2021).

A cross-sectional study with purposive sampling was used. A validated self-constructed questionnaire was posted on the HEI online teaching platform. Data were collected between April and May 2022 on the reasons for and contributing factors to changes in physical health. The Statistical Package for Social Science version 28 was used for all descriptive and inferential statistics. Eighty-nine per cent of the respondents were females, whilst the typical age group (85.9%) was 21-25 years.

The findings demonstrated an increased workload and sitting time. On the positive side, hygiene practices improved, and drug usage decreased. Sympathetically, there was decreased physical activity, mental health and quality sleep. Therefore, it could be concluded that the COVID-19 pandemic negatively affected the students' physical health. This study may assist the department of health in evaluating the impact COVID-19 restrictions had on the physical health of students. Furthermore, these findings may help the HEI understand the quality of student academic performance during the COVID-19 pandemic.

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