Int J Biol Med Res. 2024; 15(1): 7750-7755

Contents lists available at BioMedSciDirect Publications

International Journal of Biological & Medical Research

Journal homepage: www.biomedscidirect.com

Original Article

Adapting to Adversity: Insights from a Stand-alone Human Immunodeficiency Virus Testing Centre in India During the COVID-19 Pandemic

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ARTICLE INFO

Keywords:
COVID-19
HIV Testing
Healthcare Adaptation
Staff Efficiency
Pandemic Impact.

ABSTRACT

Background: The global healthcare landscape confronted unprecedented challenges during the COVID-19 pandemic in 2020. Materials and Methods: This study explores how the COVID-19 pandemic impacted healthcare services in India, with a focus on the Stand-alone HIV Testing Centre (SA-ICTC) at Safdarjung Hospital, New Delhi, during the period from April 1, 2020, to March 31, 2021. Amid the pandemic, specialized clinics for Sexually Transmitted Infections (STI) and Reproductive Tract Infections (RTI) saw a decline in outpatient attendance, while the SA-ICTC faced unique challenges. Results: To address these challenges, innovative solutions were implemented including alternate-day duty rosters, leading to increased staff efficiency and reduced errors. The study noted a 47.9% reduction in the total number of HIV tests conducted, although the proportion of HIV-positive clients accessing services remained stable. Referrals from STI clinics and Targeted Intervention sites decreased, while referrals from the Tuberculosis (TB) center remained consistent. Client categories accessing ICTC services decreased, except for referrals from Facility Integrated Counseling and Testing Centres (F-ICTC). Conclusions: This research underscores the intricate interplay between COVID-19 and HIV, prompting positive changes in healthcare work ethics, documentation practices, and service delivery. It emphasizes the significance of strategic supply chain management, recommending a 1-2-month buffer of testing kits and consumables in HIV testing facilities to ensure uninterrupted service delivery during crises, thus safeguarding the healthcare needs of vulnerable populations.

1. Introduction

The COVID-19 pandemic, which sent shockwaves across the globe in 2020, serves as the backdrop for this discussion. It is marked by its sudden emergence and the far-reaching consequences it brought to every corner of the world [1]. As the pandemic continued to evolve, India, like many other nations, faced its own unique set of challenges in dealing with the outbreak [1].

In January 2020, the pandemic officially reached Indian shores, initiating a series of events that would profoundly impact the nation's healthcare infrastructure. By March of the same year, the number of COVID-19 cases began to surge at an alarming rate. To mitigate the rapid spread of the virus and protect the public, the Indian government made the historic decision to enforce a nationwide lockdown on March 22, 2020. This significant measure aimed to curb the transmission of the virus, albeit with significant consequences for various aspects of daily life, including healthcare [1].

One of the most conspicuous effects of the pandemic was the transformation it brought to the healthcare landscape. Hospitals faced an unprecedented influx of COVID-19 patients, resulting in a strain on medical resources, particularly hospital beds. This sudden and overwhelming demand for healthcare services necessitated a swift adaptation to ensure that all patients received the care they required [1].

As the pandemic unfolded, a notable trend emerged - a decline in the number of out-patient attendees at clinics specializing in Sexually Transmitted Infections (STI) and Reproductive Tract Infections (RTI). This drop in foot traffic signaled that individuals were increasingly avoiding non-essential medical visits during these uncertain times, potentially leading to concerns about undiagnosed and untreated conditions [1].

Amid these challenges, the Stand-alone Integrated Counseling & Testing Centre, HIV laboratory (SA-ICTC), serving not only the capital city of New Delhi but also its neighboring provinces, encountered its own set of hurdles during the pandemic. These

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sought to comprehensively understand, address, and shed light on the experiences and adaptations of healthcare facilities dealing with HIV testing and care during this exceptional period [1].

This study provides an introduction to the multifaceted impact of the COVID-19 pandemic on healthcare services in India, underscoring its influence on STI and RTI clinics, ICTC laboratories, and the SA-ICTC HIV testing laboratory. The subsequent study, detailed within this narrative, was initiated with the primary objectives of examining functional changes within the SA-ICTC laboratory, evaluating shifts in staff efficiency, and exploring potential correlations between the pandemic and HIV positivity rates among COVID-19 patients. This study aims to offer valuable insights into the evolving healthcare landscape during this unparalleled global health crisis.

The provided section outlines the methods and data collection process used in a study conducted within the SA-ICTC HIV Lab, located at Safdarjung Hospital in New Delhi, India. The study spanned from April 1, 2020, to March 31, 2021, coinciding with a full year of the COVID-19 crisis. The study design is described as a retrospective observational study, meaning that researchers examined past data to draw conclusions. Here is a detailed breakdown of each element:

Study Venue:

The study was conducted at the SA-ICTC HIV Lab, situated within Safdarjung Hospital, which is identified as one of the largest tertiary care hospitals in New Delhi, the capital city of India. The ICTC (Integrated Counselling and Testing Centre) is part of the Apex Regional STD Centre and State Reference Laboratory for HIV. This department caters exclusively to the diagnosis and management of Sexually Transmitted Infections (STIs), Reproductive Tract Infections (RTIs), and HIV/AIDS.

Study Period:

The study covered the timeframe from April 1, 2020, to March 31, 2021. This period corresponds to the entire year during which the COVID-19 crisis was prevalent.

Study Design:

The chosen study design is described as a retrospective observational study. In such a study, researchers analyze existing data from past records to draw conclusions. In this case, researchers examined data related to the operation of the SA-ICTC HIV Lab and its changes during the COVID-19 pandemic.

Study Process:

The study process involved investigating various aspects of changes within the HIV testing facility during the COVID-19 lockdown.

Researchers compared these changes with data from the previous two years, specifically 2018-19 and 2019-20, to understand how the pandemic affected the facility's operations and

Data Collected: The following data points were collected and analyzed during the study.

· Total number of ICTC attendees during the study period: This data likely provides insights into how the overall attendance at the Integrated Counselling and Testing Centre was affected during the COVID-19 crisis.

· The categories of the ICTC attendees: This information includes demographic details or reasons for seeking services at the ICTC, helping to understand the composition of attendees.

· The number of HIV tests performed and their positivity: Tracking the number of HIV tests conducted and the positivity rate during the pandemic can reveal changes in HIV testing patterns and outcomes.

· Staff details - Changes in staff strength, availability, and work efficiency: This data helps assess how the SA-ICTC's workforce was affected by the pandemic, including any changes in staffing levels and staff efficiency.

· Availability of supplies and consumables: Information on the availability of essential supplies and consumables is crucial for understanding resource challenges faced by the facility.

· Behavioral changes among faculty, staff, and nursing orderlies/attendants: Examining behavioral changes among healthcare providers can provide insights into the impact of the pandemic on the facility's personnel.

· Details of COVID-19 patients getting tested for HIV: This data includes information about COVID-19 patients who also underwent HIV testing, which can shed light on potential intersections between these health issues.

RESULTS: Table 1 Provides a structured overview of staff attendance during the pandemic.

Table 1 Staff attendance of SA-ICTC during the COVID-19 pandemic year.

SA -ICTC Staff	Total staff	Staff present during pandemic lockdown	Remarks
Counsellors	03	01	
Laboratory Technicians	04	02	
Technical Officer	01	-	Attendedalternate days
Authorizedsignatories (Medical Microbiologists)	02	01	

From Table 1, it is evident that the staffing levels at the SA-ICTC experienced a significant reduction, declining to 50% of their pre-

Table 2 SA-ICTC Staff efficiency during the three-year period.

Sl. No.	Efficiency parameter measured	Score during 201819	Score during 201920	Score during pandemic 202021	Remarks
1	Errors reported in registration	4	1	1	
2	Errors reported in sampling, labelling, testing	4	3	0	
3	Competency assessment scores	7	6	18	Numberof staff members scoring full marks.
4	Average Attendance in Training sessions	52.39 % (7 classes held)	44.99 % (8 classes held)	55.33 % (6 classes held)	

Table 3 COVID-19 patients tested for HIV

MONTH	MALES TESTED	FEMALES TESTED	TOTAL TESTED	HIV POSITIVE
April 2020	0	0	0	0
May 2020	0	0	0	0
June 2020	3	2	5	0
July 2020	5	2	7	0
August 2020	1	0	1	0
September 2020	2	1	3	0
October 2020	1	1	2	0
November 2020	6	0	6	0
December 2020	2	2	4	0
January 2021	14	6	20	1
February 2021	0	0	0	0
March 2021	4	3	7	0
TOTAL	38	17	55	1 (1.82%)

Table 3 presents data on the HIV testing outcomes among COVID-19 patients. A total of 55 COVID-19 patients, comprising 38 males and 17 females, underwent HIV testing. Among them, one individual tested positive for HIV, representing a prevalence rate of 1.82%.

Figure 1 Comparison of HIV testing data over 3 years

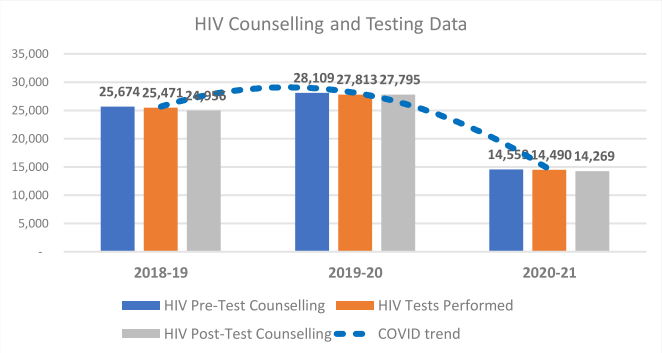

Figure 2 Data on ART referrals and Spouse testing of HIV-positive cases.

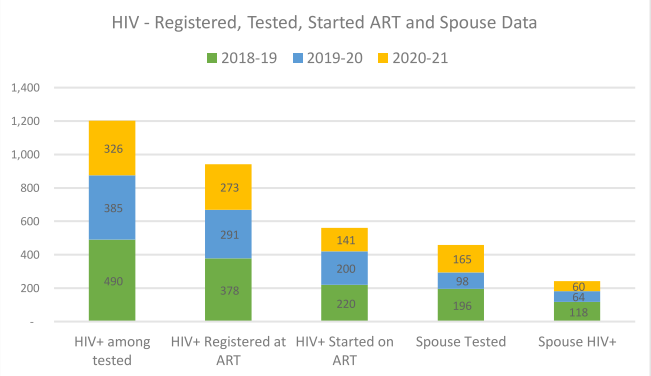

Figure 3 Testing for Syphilis at ICTC during Covid-19 pandemic

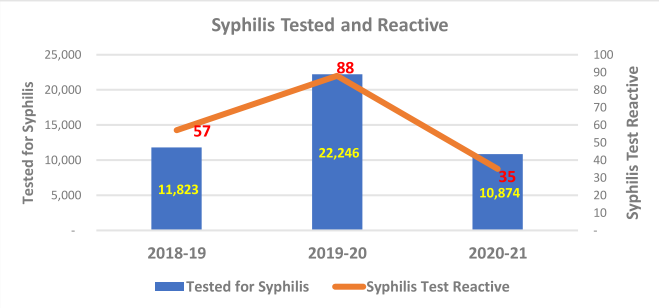

Figure 3 presents a significant reduction (51.12%) in the number of ICTC clients tested for Syphilis by RPR during the pandemic.

Figure 4 Various referrals for HIV Testing during COVID-19 pandemic

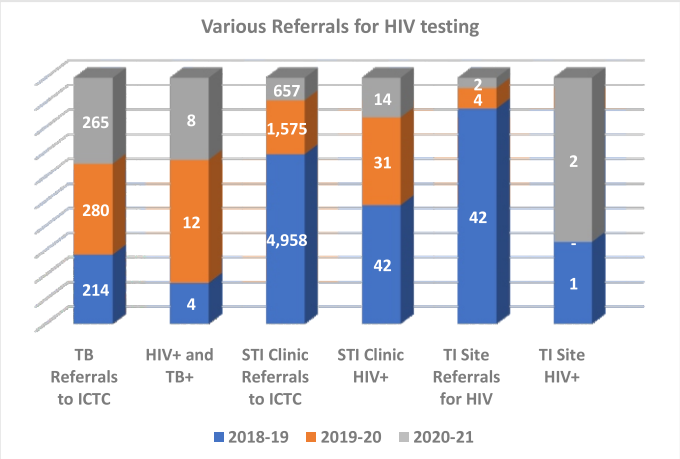

Figure 4 illustrates a substantial decline in referrals from STI clinics and Targeted Intervention sites to ICTC (58.29% and 50%, respectively), whereas referrals from the Tuberculosis (TB) center remained relatively consistent.4

Figure 5 Break-up of client categories at SA-ICTC

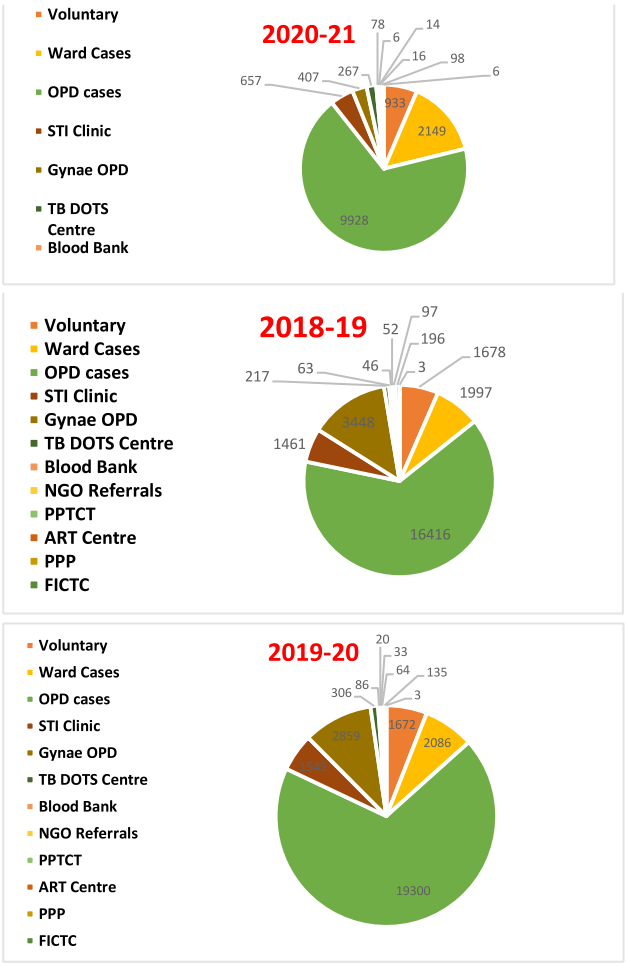

Figure 6 Changes in ICTC client categories during the COVID-19 pandemic (2019-20 vs. 2020-21)

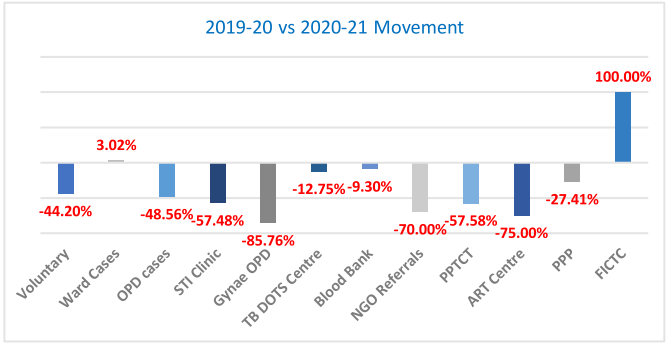

Figure 6 demonstrates a decrease in every category of client accessing ICTC HIV testing services, with the exception of referrals from the Facility Integrated Counseling and Testing Centre (F-ICTC), an emergency HIV testing facility within the hospital premises.

DISCUSSION

The onset of the COVID-19 pandemic in 2020 caught the world off guard, unleashing widespread havoc across nations. India, too, grappled with the profound effects of this global crisis. Lockdowns were imposed to restrict the movement of people and suspend many public services and activities [2]. The aim was to minimize physical interactions between individuals, reduce the spread of the virus, and alleviate the strain on healthcare facilities.

Our study focused on the Stand-alone HIV testing center (SA-ICTC) within our healthcare system, which serves not only the populous capital city of New Delhi but also the neighbouring states of Haryana, Punjab, and Uttar Pradesh. Prior to the pandemic, the SA-ICTC typically received an average of over 28,000 clients annually. However, during the pandemic year of 2020-21, there was a sharp decline in ICTC client attendance by 47.9%, a clear consequence of the COVID-19 pandemic [3].

During the pandemic and lockdown, public transport services were significantly disrupted or even temporarily halted in various regions of India. This disruption made it challenging for employees to travel to their workplaces, including healthcare facilities, like our SA-ICTC. The attendance of staff and faculty in our department plummeted to 50% of its usual strength due to this nationwide lockdown and severe restrictions on public transport. Many staff members faced considerable difficulty in commuting to their workplace. Simultaneously, client footfall decreased significantly in both our ICTC and STI clinics. In response to these challenges, we devised a duty roster for our staff and faculty, requiring them to alternate their days of duty (as indicated in Table 1).

Analysis of Table 2 reveals that the reduced workload during the pandemic led to an enhancement in the work efficiency and competence of ICTC staff. Instances of errors in tasks such as registration, labelling, sampling, and HIV testing noticeably decreased. Staff attendance improved, both in online classes organized during the pandemic and in onsite training for those

present on alternate duty days. These improvements translated into enhanced performance during the annual competency assessments for staff members [3].

Regarding the availability of testing kits and consumables, our ICTC adopts a proactive approach by procuring stocks well in advance (over a 3-month period). Additionally, the overall number of cases decreased during 2020-21, ensuring that no shortages of kits or consumables were encountered during the study period. This stability in the supply of testing kits highlights the SA-ICTC's resilience and capacity to maintain essential resources required for HIV and RPR testing during a challenging public health crisis [3].

An important aspect of our study was the HIV testing among COVID-19-positive patients, which involved pre and post-test counseling by ICTC counselors. As indicated in Table 3, of the 55 COVID-19-positive patients tested for HIV, only 1 individual (1.82%) tested positive.

Figures 1 and 2 depict the trends in HIV testing. Figure 1 shows a significant 47.9% reduction in the total number of HIV tests conducted in 2020-21 compared to the previous year, reflecting the considerable impact of the COVID-19 pandemic. Figure 2 reveals that the percentages of HIV-positive clients registering at the ART center and HIV testing among the spouses of HIV-positive clients remained relatively stable [4].

In summary, our study provides a comprehensive overview of the impact of the COVID-19 pandemic on HIV testing and healthcare services. The data highlight the challenges faced, including reduced staff attendance, decrease in patient footfall, and alterations in testing and referral patterns. These findings emphasize the importance of flexibility and adaptability within healthcare systems during crisis situations to ensure the continuity of essential services [5]

CONCLUSIONS

Interconnected Impact of COVID-19 on HIV Patients and Testing Facilities: This study underscores the intricate interplay between COVID-19 and HIV, illustrating the adverse effects that one has on the other, and vice versa. It becomes evident that these two global health challenges share a complex relationship, extending beyond the immediate health of affected individuals to healthcare facilities and testing services.

Turning Adversities into Opportunities: A key takeaway from this study is the ability to turn adversities into opportunities. The COVID-19 pandemic, a formidable challenge for healthcare systems worldwide, has provided a unique platform for growth and improvement. We have observed tangible enhancements in work ethics, documentation practices, service provision skills, and the diligent practice of Standard or Universal Precautions. These lessons can be harnessed to fortify healthcare delivery in the face of future crises.

Strategic Supply Chain Management: A critical lesson highlighted in this study pertains to the maintenance of supply chain management. The importance of maintaining a strategic buffer of 1-2 months' worth of testing kits and consumables in HIV testing facilities cannot be overstated, especially during challenging times such as the COVID-19 pandemic. This foresight ensures continuity in essential services even when confronted with circumstances like lockdowns or disruptions in supply chains, thereby safeguarding the healthcare requirements of vulnerable populations.

Finally, the profound impact of COVID-19 on both HIV patients and testing facilities has shed light on the intricate relationship between infectious diseases. The study exemplifies how adversity can be a catalyst for positive change, leading to improvements in various facets of healthcare provision. Moreover, prudent supply chain management practices, as highlighted here, are essential for maintaining seamless healthcare services, even in the face of unforeseen challenges. These lessons serve as valuable guidance for the future preparedness in delivery of healthcare systems worldwide.

ACKNOWLEDGEMENTS

We wish to express our sincere gratitude to the ICTC Counsellors, namely Ms. Neelu Singh, Ms. Harsh Madhavi, and Mr. Sanjay Kumar, for their expertise and unwavering commitment. Our sincere thanks to the ICTC Laboratory technicians, including Mr. Vijay Kumar, Mr. Brejesh Kumar, and Mr. Dushyant Sharma, for their exceptional efficiency and cooperation, particularly during the challenging times of the pandemic. We acknowledge the crucial support of the National AIDS Control Organization (NACO) and the Delhi State AIDS Control Society (DSACS) for their significant contributions in the supply of kits, consumables, and manpower. These contributions have been instrumental in our research efforts and have greatly facilitated our study.

AUTHORS' CONTRIBUTIONS

SM designed and conceptualized the study. SM collected the data and analyzed the data. SM and AL wrote the entire manuscript together. SM reviewed the manuscript.

FUNDING

Nil

COMPETING INTERESTS

The authors state that they have no conflicts of interest.

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