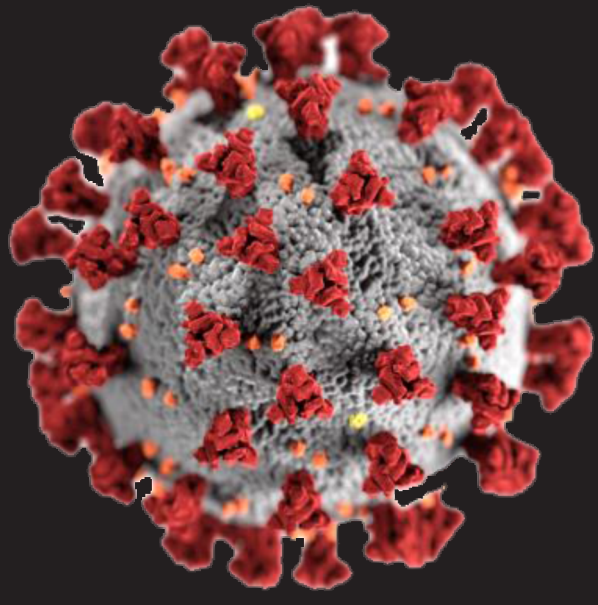
Pakistan's Fight Against COVID-19

Lessons to be learned

by Saddam Hussein



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Author: Saddam Hussein
Editors: Zeeshan Salahuddin & Saad Gul

About the Author

Saddam Hussein is an economist, public policy analyst, writer, trainer, researcher, and a development professional. He graduated from the School of Economics, Quaid-i-Azam University (QAU), Islamabad. He completed his M. Phil degree from the School of Public Policy, Pakistan Institute of Development Economics (PIDE), Islamabad. Currently, Hussein serves as a Research Fellow at the Center for Research and Security Studies (CRSS) and as a Program Officer for CRSS' sister organization - Afghan Studies Center (ASC), Islamabad. He also writes regularly for national and international print and electronic media including The Diplomat, Expert Legal Review, Modern Diplomacy, The Nation, Daily Times and Matrix Mag. So far, he has authored more than 150 articles in the domains of security, politics, economics, institutions, philosophy, and Pak-Afghan affairs. Hussein frequently delivers keynote talks and conducts training workshops on topics that come under governance, development, leadership, motivation, economy, rule of law, and social cohesion.

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Center for Research and Security Studies (CRSS)
14-M, Second Floor Ali Plaza, F-8 Markaz,
Islamabad, Pakistan
Tel: +92-51-831-4801-03
Fax: +92-51-831-4804
Email: info@crss.pk
Web: www.crss.pk

Pakistan's Fight Against COVID-19

Pakistan has, against all forecasts and odds, bent the COVID-19 curve in its favor. A sluggish rise, a premature peak, and a sharp decline through September presents Pakistan as a remarkable case. What is at work and how has the country been able to achieve this feat? This short study maps out the methodology and factors that went into Pakistan's response to the global pandemic between the start of the year and early October, 2020.

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Executive Summary

At its peak, Pakistan observed 6,825 positive cases on June 14, 2020, and a maximum positivity ratio[1] of 23.9 percent on May 28, 2020[2]. There were 581 critically ill patients on ventilators on June 21, 2020. The most number of daily deaths at 153 were recorded on June 20, 2020.

Roughly speaking, COVID-19 peaked in mid-June in Pakistan and then showed a consistent decline. The R_0 factor[3], the index of transmission of the disease, was at its height much earlier, at 2.47 in April, 2020. This number now has now dropped to 0.7. This means that the outbreak was diminishing and the spread of the disease was slower. Following the decline, it became evident in mid-July that the potency of the pandemic was demonstrably different by default in South Asia than in the northern hemisphere. The precise reason for this still eludes codification.

What can be codified, however, are Pakistan's data-based decisions to curb the pandemic. Realizing the potential threat, Pakistan started early in responding to the global pandemic. The first meeting of the Core Committee on COVID-19 was called on January 15, 2020. It immediately started reinforcing the country's Points-of-Entries (POEs) and suggested strict health screening of all incoming passengers.

Sandwiched between Wuhan in China and Qum in Iran – the two devastated epicenters of the virus - Pakistan's first documented case emerged on February 26, 2020. On March 13, 2020, the national effort was intensified by calling the National Security Committee (NSC) meeting which led to the creation of a National Coordination Committee (NCC) and eventually the National Command and Operation Centre (NCOC) was established on March 27, 2020.

Following the NSC meeting, a major lockdown was announced by the government, whereby large gatherings were banned as well as borders, educational institutions, cinemas, sports' events, religious gatherings, and

[1] Percent of people showing positive infection among the total number of people tested.

[2] Mirza, Z. (28 August, 2020). Rise and fall of COVID-19. The News International. Retrieved October 1, 2020, from https://www.thenews.com.pk/print/706671-.

[3] R_0, (R-naught) represents the number of new infections estimated to stem from a single case. In other words, if Ro is 2.5, then one person with the disease is expected to infect, on average, 2.5 others. R_0 below 1 suggests that the number of cases is shrinking, possibly allowing societies to open back up. R_0 above 1 indicates that the number of cases is growing, perhaps necessitating renewed lockdowns or other mitigation measures.

wedding halls etc. were closed. Since its formation, the NCOC has been meeting every morning, digging into the latest data received from provinces, studying epidemiological curves, outlining trends, deliberating the salient points with the provincial leadership, making informed decisions, and then ensuring implementation. This constancy of effort seems to have paid off.

Prime Minister Imran Khan's apparent concern about the effects of the prolonged lockdown on daily wagers also helped shape the course of the government's response. This was regardless of the massive pressure from the media and the elite for a complete shutdown of the country. Owing to this, Pakistan's government developed the largest ever emergency cash transfer program, PKR 144 billion, to mitigate the economic hardship faced by 12 million poor families. Each family received PKR 12,000 during the most stringent months of the lockdown. The government also provided a PKR 1.5 trillion economic stimulus package. These initiatives provided significant relief to the vulnerable segments of the society. Throughout this response effort, the trick was striking a balance between lives and livelihoods.

Pakistan's response may have had some deficiencies and inefficiencies; there is always room for improvement. The overall response strategy was being tailored in reaction to the evolving situation. Some of the significant interventions include:

- development of national guidelines and Standard Operating Procedures (SOPs)
- reinforcement of POEs
- enhancing testing capacity, tracking, and quarantining
- smart lockdowns
- consistent risk communication using various channels
- a national helpline
- a national information portal
- major international procurements of necessary supplies/equipment and delivery
- ensuring availability of Personal Protection Equipment (PPE)
- ramping-up of critical care in hospitals

- training of health workers in critical care and use of PPEs
- WeCare program for front-line health workers

The cumulative effect of these interventions is that Pakistan has been declared one of seven countries that the world needs to learn from, by the World Health Organization (WHO)[4].

[4] News Desk. (2020, September 10). WHO lists Pakistan among 7 countries world can learn from to fight future pandemics. The Express tribune. Retrieved, October 3, 2020, from https://tribune.com.pk/story/2263406/who-lists-pakistan-among-7-countries-world-can-learn-from-to-fight-future-pandemics.

Global Picture

COVID-19 is the fifth pandemic since 1918. Originating from Wuhan, Hubei, China in December 2019, the disease was originally termed "Wuhan pneumonia" as it showed pneumonia like symptoms.

The causative agent was identified as the novel coronavirus from the coronavirus family. Initially, it was named 2019-nCOV (novel coronavirus) and later on renamed as (SARS-CoV-2) or Severe Acute Respiratory Syndrome Coronavirus 2. On February 12, 2020, the WHO changed its name to the now well-known coronavirus disease 2019, or COVID-19[5].

Since its onset, COVID-19 has affected 37,614,668 people throughout the world with 1,078,274 total deaths as of October 12, 2020, as per Coronavirus Resource Center, John Hopkins University of Medicine. This viral disease triggered a state of high alert and public health emergency as it continued its rampage across the globe. The United States (US), India, Brazil, Russia, Columbia, Peru, Mexico, Italy, Spain, and Iran are the most effected countries[6].

Moreover, the onslaught of the pandemic has forced the world into lockdowns with unprecedented and catastrophic economic consequences. The efforts to "flatten the curve" have severely contracted economic activities around the world. The global economy, as projected by the International Monetary Fund (IMF), would contract by -3% for 2020[7]. Advanced economies and emerging markets are expected to experience growth rates of -6.1% and -1.0% against the pre-COVID-19 targets of 1.7% and 3.7%, respectively.

The severity of this crisis can be judged from the fact that the global financial crisis in 2008 reduced the annual global growth to -0.1 %, a staggering difference of 2.9 percentage points with the projected impact of COVID-19[8]. However, human adaptability has led to emerging economic prototypes and SOPs signaling resumption of most of the activities across the world in a gradual, phased manner.

[5] Harapan, H., Itoh, N., Yufika, A., Winardi, W., Keam, S., Te, H. & Mudatsir, M. (2020). Coronavirus disease 2019 (COVID-19): A literature review. Journal of Infection and Public Health.

[6] Worldometer. (2020, October 12). Reported Cases and Deaths by Country, Territory, or Conveyance. https://www.worldometers.info/coronavirus/?fbclid=IwAR3K2aRvX5HkwAAq172vbB-NLjnJiCKXUBA-eqqOqPIextktbFZHV2H2xfs#countries.

[7] Bashir, M. F., Benjiang, M. A., & Shahzad, L. (2020). A brief review of socio-economic and environmental impact of COVID-19. Air Quality, Atmosphere & Health, 1-7.

[8] Nanto, Dick K. The global financial crisis: Analysis and policy implications. Diane Publishing, 2009.

The Infodemic - Conspiracy Theories and Misinformation

Multiple conspiracy theories and misinformation campaigns have emerged since the onset of COVID-19. As WHO Director, General Tedros Adhanom Ghebreyesus, said at the 2020 Munich Security Conference: "We are not just fighting a pandemic; we are fighting an infodemic". The phenomenon of infodemic is attributed to the overabundance of information - both accurate and inaccurate - leading to the difficulty in segregation of false information from facts[9].

In the age of social media, misinformation and conspiracy theories can be extremely detrimental to public trust, especially in health programs and institutions across the globe. This creates difficulty in preventing the spread of the virus - both through precautionary measures as well as medical treatment. Against this backdrop, the WHO convened its first ever conference on infodemiology to mitigate this on June 29, 2020.

There are at least 38 major conspiracy theories about COVID-19. Some of the conspiracy theories regarding the origin of the COVID-19 include that it might be a US, Chinese, or Russian bioweapon. Others contend that it might have leaked from the Wuhan Institute of Virology in China, with some attributing the origin of virus to 5G technology. Perhaps the most outlandish theory is that this is a concerted effort by Bill Gates along with the Vatican Church to reduce the world population[10].

There is also a plethora of misinformation pertaining to the 1) nature of the virus, 2) its prevention and cure, and 3) emergency measures.

Regarding its nature, it is speculated that it is similar to a common cold or the belief that Africans and Indians are immune to the virus. Some completely deny that the Coronavirus exists. We were able to find at least 21 pieces of misinformation related to nature of the virus.

Regarding prevention and cure of COVID-19, 86 examples were recorded,

[9] Uscinski, J. E., Enders, A. M., Klofstad, C., Seelig, M., Funchion, J., Everett, C., & Murthi, M. (2020). Why do people believe COVID-19 conspiracy theories? Harvard Kennedy School Misinformation Review, 1(3).

[10] Jovančević, A., & Milićević, N. (2020). Optimism-pessimism, conspiracy theories and general trust as factors contributing to COVID-19 related behavior–A cross-cultural study. Personality and Individual Differences, 167, 110216.

ranging from using acetic acid, steroids, essential oils, drinking hot water, and gargling with salt water to using anti-biotics, drinking cow urine, and several other "remedies" to thwart or weaken the virus[11].

Emergency measures – the third popular piece of misinformation – also saw variations of narratives. For example: preventing human interaction entirely or a month of social distancing can eliminate the pandemic altogether[12]. There was also fake news that countries are throwing COVID-19 victims' dead bodies into the sea or murdering those that are infected. We found 34 pieces of misinformation circulating about the emergency measures taken due to COVID-19.

[11] Shahsavari, S., Holur, P., Tangherlini, T. R., & Roychowdhury, V. (2020). Conspiracy in the time of corona: Automatic detection of covid-19 conspiracy theories in social media and the news. arXiv preprint arXiv:2004.13783.

[12] Erceg, N., Ružojčić, M., & Galic, Z. (2020). Misbehaving in the corona crisis: The role of anxiety and unfounded beliefs.

COVID-19 in Pakistan - the Three Critical Decisions

Initial cases emerged in the province of Sindh, but then it spread rapidly to all parts of Pakistan[13]. The spike in the number of cases was observed on June 14, 2020 with 6,825 confirming positive out of 29,546 tested for COVID-19.

The Government of Pakistan (GOP) has taken various initial steps against COVID-19 such as issuing a national action plan. These initiatives were launched to ensure preparedness and response to COVID-19 in Pakistan on February 12, 2020.

The plan was issued as a pre-emptive measure at a time when the world was witnessing the spread of COVID-19, but not a single case was registered in Pakistan. The National Command and Operation Centre (NCOC) was established on March 27, 2020 to coordinate country wide efforts against the pandemic.

1. Institutional novelty - establishment of NCOC

The NCOC is the nerve center that synergizes and articulates a unified national effort against COVID-19. It implements the decisions of National Coordination Committee on COVID-19. The NCOC is a one window operation to collate, analyze, and process information based on raw data and human intelligence collected from across Pakistan through all four provinces, Azad Jammu and Kashmir (AJK), Gilgit Baltistan (GB) and the Islamabad Capital Territory (ICT), dedicated representatives, and centers.

The NCOC is a unique and innovative prototype, from both an organizational and political perspective. The success of the NCOC is apparent by the results it has delivered. It is now routinely touted as a novel solution to national level emergencies and catastrophes[14] (please also see the challenges section).

What is truly astounding about the NCOC is that it does not affect the decision-making hierarchy or the constitutional responsibilities, and the rights of federal or provincial governments are not infringed, despite dozens

[13] Waris, A., Khan, A. U., Ali, M., Ali, A., & Baset, A. (2020). COVID-19 outbreak: current scenario of Pakistan. New Microbes and New Infections, 100681.
[14] Umer, H., & Khan, M. S. (2020). Evaluating the Effectiveness of Regional Lockdown Policies in the Containment of COVID-19: Evidence from Pakistan. arXiv preprint arXiv:2006.02987.

of institutions operating at the federal and provincial level. Pakistan Armed Forces also assisted the civilian government in executing the decisions taken under the umbrella of the NCOC.

The NCOC took "over 50 data-based decisions" to combat the pandemic. One such decision was to develop an integrated mechanism of information sharing so that nationwide COVID-19 cases could be monitored directly from the NCOC. Immediate actions could be taken as and where necessary.

The lesson here is that there now exists a framework of effective horizontal and vertical communication. Data suggests that countries with competing federal and non-national units that lacked centralized tracking and decision-making have suffered the worst. The NCOC serves as a roadmap to gather all the tiers of the state as well as mobilize all the resources under one roof to coordinate and plan jointly, leading to each tier and each arm of the state executing its respective part.

2. Smart utilization of polio prevention resources

Pakistan utilized the extensive polio eradication machinery for early tracing and tracking of COVID-19 cases. This helped the country to take countermeasures at a very early stage[15]. Since 1994, the Pakistan Polio Eradication Programme (PPEP) has been fighting to end the crippling poliovirus from the country, which sadly remains one of two countries in the world where the virus is still endemic. The programme is driven by about 265,000 polio workers (the largest surveillance network in the world) who collect and analyze quality data. It is comprised of some of the best epidemiologists as well as public health experts from Pakistan and around the world.

Few health programmes have as much practice tracking viruses or reaching out to communities as the Pakistan polio eradication programme. Leveraging the strength of this network, Pakistan was able to track and trace COVID-19 cases very early. Currently, the polio team is providing assistance across the entire country, with a special focus on strengthening surveillance and raising awareness.

[15] Al Jazeera. (2020, August 25). Pakistan wins rare, fragile success against novel coronavirus. https://www.aljazeera.com/news/2020/8/25/pakistan-wins-rare-fragile-success-against-novel-coronavirus.

3. Ramping up the health infrastructure in Pakistan

Decentralization and fragmentation of healthcare services appears to have had a direct correlation with severely affected countries.

In Pakistan, the weaknesses of the healthcare infrastructure was revealed during the pandemic. For instance, initially Pakistan was short on medical facilities, equipment as well as quarantine and training centers. Resultantly, samples from tests were being sent to China until the government received primers, testing kits, and equipment from other countries.

Once this immense gap was identified, the NCOC ramped up the efforts to add healthcare capacity and infrastructure. According to data collected from NCOC:

- Pakistan's government has designated 35 tertiary hospitals for COVID-19 throughout the country: 1 in ICT, 10 in Baluchistan, 7 in Khyber Pakhtunkhwa (KP), 6 in Punjab, 4 in Sindh, 3 in AJK, and 4 in GB.
- There are 215 isolation facilities throughout the country: 1 in ICT, 14 in Balochistan, 110 in KP, 50 in Punjab, 5 in Sindh, 15 in AJK, and 21 in GB.
- Out of 23,557 quarantine facilities, 350 are in ICT, 5,897 in Balochistan, 2,760 in KP, 10,948 in Punjab, 2,100 in Sindh, 530 in AJK, and 972 in GB.
- The laboratory testing facilities for COVID-19 throughout the country as of July 10, 2020 are 136, operating under both civilian and armed forces' control.
- Healthcare facilities across the country were also equipped with over 2,700 ventilators and oxygenation units during this time, according to a private interview conducted with Federal Minister for Planning and Special Initiatives (MPSI)[16].
- Another 50 crores have been set aside for healthcare infrastructure upgradation, while the National Institute of Health (NIH) is being revamped into six broad structures, also according to the same interview.

[16] This was shared by Asad Umar, the Chair NCOC and Federal Minister for Planning and Special Initiatives (MPSI), during an exclusive interview with CRSS.

Pakistan's Comprehensive Multipronged Response to COVID-19

1. Smart lockdowns and banning large gatherings in all forms

The first lock down in Pakistan was imposed by the Sindh government after the first COVID-19 case was reported. It was implemented with the help of military support[17]. The Federal government imposed a lock down on March 24, 2020.

The idea was to restrict maximum number of infected persons in a targeted manner to an identified hotspot, and done at a time when the information regarding the virus was sparse, continually changing, and rife with conspiracy theories. This would contain local COVID-19 spread and thereby break the transmission cycle of the disease. There were some exceptions for businesses selling basic necessities. For instance, medical and grocery stores remained open. They had to strictly follow the government's provided schedule and COVID-19 related SOPs. Restaurants were also allowed to operate, but only for take away and delivery.

Additionally, all public gatherings were banned, including wedding halls, cinemas, sports' events, and religious gatherings etc., initially for two weeks. Moreover, public and private schools as well as technical institutions across Pakistan remained closed for three weeks initially. Pakistan's chief justices were also requested to instruct all courts not to schedule cases for three weeks. Jails did not allow visitors during this period. Furthermore, on April 01, 2020 the government extended the lock down until April 14, 2020 because the situation was constantly deteriorating with ever increasing number of cases and a very high positivity rate.

Roughly 2,300 smart lockdowns have been implemented across the country which affected more than 47 million people. These smart lockdowns proved very effective despite severe resistance from various stakeholders[18].

Smart lockdowns slowly evolved into micro-smart lockdowns (MSLs). The government announced implementation of MSLs from September, 2020.

[17] Tribune. (2020, May 1). Sindh imposes complete lockdown from 12 noon to 3pm on first Friday of Ramazan. The Express Tribune. https://tribune.com.pk/story/2210391/1-fate-sindh-lockdown-decided-today-national-covid-19-cases-hit-15759

[18] Farooq, F., Khan, J., & Khan, M. U. G. (2020). Effect of Lockdown on the spread of COVID-19 in Pakistan. arXiv preprint arXiv:2005.09422.

Unlike smart lockdowns, which may be restricted to a neighborhood, or a small locale, MSLs lock down a particular street or even building where cases have clustered[19]. Contact tracing and hard data is used to drive these strategic decisions that affect the least number of people.

Finally, a major source of spread was feared to be educational institutions. The GOP opted for the shutting down of all public and private sector educational institutions, along with all the technical training institutes across the country. Educational institutions would remain closed until at least May 31, 2020. This was later revised several times, with institutions finally opening up under strict SOPs around mid-September.

2. Risk communication and information campaign

According to Dr. Zafar Mirza, former Special Advisor to the Prime Minister on Health, the incessant information sharing and risk messaging is a "less appreciated aspect of the COVID-19 success story in Pakistan[20]." The NCOC took weekly stock of the information campaign and adjusted its strategy accordingly. Dr. Mirza says that three strategic approaches were leveraged: policy statements, public service messages (PSMs), and social media. Since roughly two thirds of Pakistan's population use mobile phones, text messages and ring-back tones were also used to spread PSMs to the general public.

The media - both print and electronic - played a key role in launching awareness campaigns throughout Pakistan. This included providing updates, promoting personal hygiene and social distancing education, and reminding people to be responsible citizens, to harnessing national support for all the frontline workers (health care worker and law enforcement).

Private sector organizations enhanced these efforts through advertisements and public service messaging in print, electronic, and social media formats[21].

The civil society extended their support in remarkable ways across a wide variety of vectors. For instance, identifying less fortunate people who needed food or other basic necessary supplies and then having the relevant goods delivered to them through third-party delivery companies. Some examples

[19] This was shared by Asad Umar, the Chair NCOC and Federal Minister for Planning and Special Initiatives (MPSI), during an exclusive interview with CRSS.
[20] Mirza, Z. (3 October, 2020). Risk communication for COVID-19. The News International. Retrieved October 3, 2020, from https://www.thenews.com.pk/print/723693-.
[21] Ali, S. (2020, May 06). Role of civil society in emergencies. https://dailytimes.com.pk/608012/role-of-civil-society-in-emergencies.

of financing charitable initiatives such as technical support for disinfection spray activities in hot-spots were also recorded.

3. Not evacuating Pakistani students at Wuhan

In late January 2020, despite immense pressure from various stake holders, the GOP decided not to evacuate roughly 500 Pakistani students from Wuhan, China. Since the students could be potential carriers of the COVID-19 virus, their return to Pakistan could become a significant source of an outbreak[22].

There was more controversy around this because the GOP, in an imprudent move, allowed religious pilgrims back into the country from Iran, which at the time was one of the epicenters of COVID-19. It is believed that the return of these pilgrims triggered the spread of COVID-19 in Pakistan. However, the government denied this, stating that pilgrims were properly quarantined for at least 28 days and only allowed to travel inwards after testing negative for COVID-19[23].

Interestingly, the first known case of COVID-19 in Pakistan, on February 26, 2020, was from a citizen returning from Iran.

4. Border closures and travel suspension

On March 16, 2020, Pakistan closed its borders with Afghanistan and Iran - initially for two weeks[24]. Since Iran was one of the hardest hit by the pandemic, visitors returning from religious, personal or business trips – were screened vigorously at the entry points. Ultimately, owing to progressively rising cases, all flight operations with Iran were suspended.

Soon after, Pakistan also established an isolation center to quarantine the pilgrims returning from Iran by road at Taftan, in Balochistan. An advisory on the outbreak was also issued by the NIH on January 28, 2020, explaining in detail the mode of transmission, symptoms and the preventive measures.

[22] Deutsche Welle (www.dw.com). (2020, February 5). Pakistan refuses to evacuate students from Wuhan. DW.COM. https://www.dw.com/en/pakistan-refuses-to-evacuate-students-from-wuhan/a-52265824

[23] The News. (2020, May 19). Making Zaireen scapegoat for COVID-19 not fair. https://www.thenews.com.pk/print/660926-making-zaireen-scapegoat-for-covid-19-not-fair

[24] Pakistan shuts border with Iran, Afghanistan over virus. (2020, March 16). Anadolu Agency. https://www.aa.com.tr/en/asia-pacific/pakistan-shuts-border-with-iran-afghanistan-over-virus/1767278

5. Civil-military cooperation

The primary civil-military coordination body, the National Security Committee (NSC), issued the first response in the wake of the COVID-19 outbreak on March 13, 2020[25]. A military delegation was sent to China to learn from their experience.

On March 23, the government and military mutually decided to deploy troops for the effective enforcement and implementation of lockdowns in the country, including all four provinces along with the AJK, GB and in the line of control (LoC) areas. An announcement was made by the media office of the Pakistan military that their medical staff and scientists would also assist in fighting the coronavirus.

Additionally, COVID-19 testing laboratories were established in several military hospitals across Pakistan and help desks were set up for the convenience of patients in tracing the actual and potential carriers[26]. The Army Chief ensured in his briefings that the plans provided by the government would be executed effectively. He also gave guidelines to undertake the necessary precautions, while assisting the civil administration in their efforts for the health and safety of the people of Pakistan.

The Inter Services Public Relations (ISPR) issued a press release on March 31, which stated that the soldiers, scientists, engineers, and other employees from all the wings of the military contributed a part of their salaries (according to pay scale) to the COVID-19 Relief Fund[27].

6. Quarantine centers

On April 4, 2020, the National Disaster Management Authority (NDMA) instructed almost all the three and four-star hotels to act as quarantine centers[28]. Upon instruction from the government, the NDMA issued a letter that stated that all the provinces of Pakistan must follow the guidelines

[25] Prime Minister's Office. Islamic Republic of Pakistan. (2020, March 13). https://pmo.gov.pk/news_details.php?news_id=1066.

[26] Arab News. (2020, March 17). COVID-19: Pakistan army sets up testing labs at all its major hospitals. https://www.arabnews.pk/node/1642736/pakistan.

[27] Tribune. (2020, March 31). Pakistan Army departments donate salaries in COVID-19 relief fund. https://tribune.com.pk/story/2188180/1-pakistan-army-departments-donate-salaries-covid-19-relief-fund

[28] Dawn. (2020, April 04). IHC allows govt to turn hotels into quarantine centres. https://www.dawn.com/news/1546285/ihc-allows-govt-to-turn-hotels-into-quarantine-centres.

provided by the World Health Organization (WHO). On the basis of these guidelines provided by NDMA, all the hotels which had transformed into quarantine centers were provided with the essential supplies. Single rooms were provided for patients that tested positive.

The biggest quarantine center in Pakistan was established by the Punjab government on March 04, in Multan[29]. The center was equipped to cater around 6,000 patients at a time. Another 1,000-bed quarantine center was set up in Wazirabad on March 22. This materialized as a result of public-private collaboration.

Pakistan Railways decided to suspend train services temporarily to establish quarantine centers in six of their train coaches on March 30, 2020. This quarantine center had the capacity for accommodating 50 patients at a time[30].

7. Pakistan develops a portable ventilator

In the wake of a call by the GOP to overcome a shortage of ventilators, many companies submitted their designs and prototype models, which were then tested. A Pakistan-based artificial intelligence company named "Poulta" also invented a ventilator that was presented before the Pakistan Engineering Council (PEC) and the Pakistan Disaster Management Authority (PDMA)[31]. The company was able to manufacture the ventilators for just $2200. The cost of similar ventilators ranges from $10,000 to $12,000 if they are imported.

In an interview with Asad Umar, the Federal Minister MPSI, CRSS was told that the country is now equipped with 2,700 ventilators and oxygenation units across its public hospitals[32].

8. Ensuring food and medical supplies

A plan was devised by the Ministry of Food Security and Research to help keep the supply chain intact. The provincial governments were instructed to ensure food security and appropriate access. PKR 50 billion were issued by

[29] Raja Riaz. (2020, March 18). Punjab sets up biggest quarantine center in Pakistan to fight coronavirus. Retrieved October 11, 2020, from https://www.arabnews.pk/node/1643391/pakistan.
[30] Arab News. (2020, April 01). Pakistan turns trains into coronavirus isolation wards. https://www.arabnews.pk/node/1650561/pakistan.
[31] Saeed, H. (2020, March 31). Pakistani Startup Develops Smart Portable Ventilator. https://propakistani.pk/2020/03/31/pakistani-startup-develops-smart-portable-ventilator.
[32] This was shared by Asad Umar, the Chair NCOC and Federal Minister for Planning and Special Initiatives (MPSI), during an exclusive interview with CRSS.

the GOP for the effective execution of the plan[33].

Official visits were arranged for the distribution of food rations in remote areas by ministers and other civil service representatives. The UNHCR arranged medical and sanitation supplies for the health facilities situated in the refugee villages of Balochistan, KP, and Punjab.

9. Corona Relief Tiger Force

A call was made by the Prime Minister's Office on March 31, 2020 for people all across the country to digitally register for the Corona Relief Tiger Force. Volunteers were required to provide their name, age, contact number, and union council where they resided[34]. The registered members worked directly under and reported to the Deputy District Commissioner and were tasked to carry out government-backed community welfare work, e.g., delivering food and rations, educating the masses about the severity of the virus and precautionary measures.

[33] Relief Web. (2020, March 29). Pakistan: COVID-19 – Situation Update as of 29th of March 2020. https://reliefweb.int/report/pakistan/pakistan-covid-19-situation-update-29th-march-2020.

[34] The Nation. (2020, March 28). Registration for PM's Corona Relief Tigers to begin on March 31. https://nation.com.pk/29-Mar-2020/registration-for-pm-s-corona-relief-tigers-to-begin-on-march-31.

Saving the Economy from Taking a Nose-Dive

Global economic meltdown

The economic cost of the pandemic is unprecedented, especially in a globally interconnected economy. Cities were locked down, industries shut down, inflow and outflow of heavy traffic in many parts of the world halted[35]. Demand and consequent supply side of goods and services is still showing a downward trajectory (despite a recent uptick).

From an economic standpoint, the key problem is not COVID-19 itself and the number of people it affects, but the level of disruption to economies from containment measures. This has resulted in global economic slowdown, compelling major institutions and banks to cut their forecasts for the world economy.

The oil crash

What precisely caused this sudden and unanticipated economic melt-down?

To contain the outbreak, economic activity was halted across China, leading to low overall aggregate demand, especially for oil. Oil demand thus tanked sharply, with oil stock piling up within the inventories of Saudi Arabia and other oil exporting countries. They tried to cut the supply to retain the prices, but Russia increased the oil supply, compelling all suppliers to increase supply as well.

The oil price then hit its 17-year low point at USD 23 per barrel[36] on 30 March, 2020. As oil is the key trading commodity of all major economies, it caused a panic across the globe, long before the COVID-19 pandemic ravaged its way across the world, leading to panic selling of shares. Oil shares' prices dropped drastically, causing many stock markets around the world to crash. These shocks were experienced by countries all around the world.

[35] Ozili, P. K., & Arun, T. (2020). Spillover of COVID-19: impact on the Global Economy. Available at SSRN 3562570.

[36] Anadolu Agency. (2020, March 30). Brent oil price hits $23 per barrel, lowest in 17 years. https://www.aa.com.tr/en/energy/energy-security/brent-oil-price-hits-23-per-barrel-lowest-in-17-years/28810.

Pakistan's relief package

On March 24, PM Imran Khan and his team proposed a short-term comprehensive economic plan, specifically to protect the vulnerable segments of the society[37]. He announced a multi-billion-rupee relief package, which would serve as a stability cushion.

The package included PKR 200 billion for daily-wagers. PKR 100 billion was earmarked each for exports, industry, small and medium enterprises (SMEs). PKR 150 billion was allocated for low-income families and PKR 50 billion for healthcare workers and medical equipment. Additionally, myriad other initiatives were seen such as lowering oil prices and expansion of shelter homes. PKR 100 billion was held in reserve to use in countering the after effects of the lockdowns.

The Federal Board of Revenue (FBR) exempted all kinds of taxes on health safety items related to COVID-19. These included income taxes, sales taxes, and customs duties for the period of three months[38].

The State Bank of Pakistan (SBP) decided to adjust the monetary policy by cutting the policy rate by a further 150 basis points to 11 percent[39]. This brought the cumulative easing of policy rate to 225 basis points. This cumulatively cushioned the slowdown in growth.

SBP also unveiled PKR 105 billion stimulus package through two measures[40]. First, it announced a Temporary Economic Refinance Facility (TERF) to stimulate new investment in manufacturing. Under this scheme, the SBP will refinance banks to provide financing at a maximum rate of 7 percent for 10 years to help with setting up of new industrial units. The total size of the scheme is Rs 100 billion. Maximum obtainable loan size per project is Rs 5 billion.

Second, the SBP announced a 'Refinance Facility for Combating COVID-19

[37] Dawn. (2020, March 24). PM Imran announces financial stimulus package to mitigate economic fallout from COVID-19 outbreak. https://www.dawn.com/news/1543411.
[38] The News. (March 21, 2020). To combat coronavirus, FBR exempts diagnostic support, health safety items from taxes. https://www.thenews.com.pk/print/632245-to-combat-coronavirus-fbr-exempts-diagnostic-support-health-safety-items-from-taxes.
[39] Tribune. (2020, March 24). Monetary policy: SBP slashes interest rate by 150bps to 11%. https://tribune.com.pk/story/2183264/2-monetary-policy-sbp-slashes-interest-rate-150bps-11.
[40] The News. (2020, March 18). SBP unveils Rs105b stimulus package to buffer businesses from coronavirus. https://www.thenews.com.pk/print/630700-sbp-unveils-rs105b-stimulus-package-to-buffer-businesses-from-coronavirus.

(RFCC)' to support hospitals and medical centers in combating the spread of COVID-19. Under this scheme, the SBP will refinance banks to provide financing at a maximum rate of 3 percent for 5 years for the purchase of equipment to detect, contain, and treat COVID-19. The SBP will provide this facility to banks at zero percent. The total size of the scheme is Rs 5 billion, with a maximum financing limit per hospital or medical center of Rs 200 million. The facility was available until end-September 2020.

Where do we go from here?

Economic experts agree that despite alarming initial effects, there is no structural ruination so far. The stumbling of the economic activity is only demand induced; once the demand side of the equation picks back up, everything else in the equation will fall into place.

Furthermore, this is an unprecedented global challenge that humanity has never faced in this manner before. It is an ever-evolving situation, necessitating proper mapping and data-monitoring at regular intervals, so that appropriate steps could be taken in a timely manner with minimal damage done.

Demography and Median Age

Demography and median age seems to have played an important role in determining the mortality rate in various countries. The empirical evidence of this comes from countries with aging populations that faced the highest number of COVID-19 mortality rate[41].

For instance, in Italy, 70% of the population falls within the age group of 70 years and above. Whereas the population below 20 years is just around 18% of the whole. The number of deaths in Italy on October 06, 2020, is 35,961. Most of which - around 85.55% - are of those above age 70[42].

Similarly, in the United States of America (USA), the population above 50 years of age has been hit hardest by COVID-19. For instance, those falling within 50-64, 65-74 and 75-84 years of age, have witnessed a death rate which is 30, 90 and 220 times higher respectively, compared to those falling within 18-29 years age group. Out of the total 219,844 deaths caused by COVID-19 in USA, around 63% of deaths are for the above stated age groups[43].

In contrast, Niger, the youngest population in the world, has more than 60% of its population below 20 years and only 1.5% of the population is above 70 years. It has 1,182 total cases registered with death toll of only 69 for a population of 22.44 million. Likewise, in New Zealand the majority of the cases reported have been among younger population, i.e., 379 out of 1,464 total cases, which means greater recovery rate and less mortality. Hence, New Zealand has 25 deaths caused by COVID-19 to date.

This is not to say that demographics are the only factor, as a plethora of factors go into how the virus has acted in any geography, but it is a main indicator of the success of the fight against the pandemic.

The comparison on the basis of median age among states such as US, UK, Italy, Brazil, India, Bangladesh, and Pakistan which is 37.4, 40.2, 44.3, 30.3, 26.4, 25.1, and 22.5 respectively, suggests similar results. Pakistan has the lowest median value. So, it can be an indication that fairly young population also showed resistance against the spread of COVID-19. Roughly 64% of Pakistan's

[41] Goldstein, J. R., & Lee, R. D. (2020). Demographic Perspectives on Mortality of COVID-19 and Other Epidemics (No. w27043). National Bureau of Economic Research.
[42] Statista. (October 06, 2020). Coronavirus (COVID-19) deaths in Italy as of October 6, 2020, by age group. https://www.statista.com/statistics/1105061/coronavirus-deaths-by-region-in-italy/
[43] Worldometer. (2020, October 12). Reported Cases and Deaths by Country, Territory, or Conveyance. https://www.worldometers.info/coronavirus/

total population is under 30. Data shows that 76% of deaths in Pakistan occurred in patients above the age of 50.

Herd Immunity in Pakistan

Herd immunity is the phenomenon by which a large portion of a community (the herd) becomes immune to a disease, making the inter-personal spread of disease unlikely. Thus, the whole community becomes protected — not just those who are immune. If the proportion of the population that is immune to the disease is greater than the threshold proportion, the spread of the disease will drop. The percentage of the community that needs to be immune for the achievement of herd immunity varies from disease to disease and is directly proportional to how contagious the disease is.

Traditionally, there are two ways of achieving herd immunity: through the development of natural resistance by letting people get infections, or through vaccination[44]. The coronavirus is a highly contagious. It needs at least 60-70% of the population to have immunity to actually break the chain of transmission. If it is allowed to happen naturally, it will not only consume a lot of time, but will also cost a lot of human lives. So it is not a great idea to let the virus run wild in the population and infect people.

The concept of herd immunity was initially tested on mice in 1922; eventually in 1924 the phenomenon was applied to humans. The Zika virus in Brazil, the Poliovirus in USA, Measles and Rotavirus have been effectively managed and controlled by using the concept of herd immunity.

Pakistan, through WHO, conducted the National Sero-Prevalence study in July 2020, when cases were taking a nose dive. In this study the disease spread was found to be roughly 11.5%[45]. In simple terms, Pakistan is nowhere near herd-immunity at this stage.

[44] Cassoobhoy, A. (2020, July 15). Herd Immunity: What Is It and Can It End The Coronavirus Pandemic? Retrieved October 13, 2020, from https://www.webmd.com/lung/what-is-herd-immunity.

[45] This was shared by Asad Umar, the Chair NCOC and Federal Minister for Planning and Special Initiatives (MPSI), during an exclusive interview with CRSS.

Is Pakistan Ready for Second Wave of COVID-19?

While Pakistan's success in curbing the pandemic is demonstrable and remarkable, this is by no means an indication that the pandemic is over. MPSI Federal Minister Asad Umar advises caution and vigilance over all else, as a second wave is still a possibility, however remote. In fact, the government is also enforcing micro-lockdowns in the wake of the positivity rate increasing from 1.8% to over 2% in early October, 2020.

Lately, the government is carrying out sentinel testing[46] in high risk areas, and for the roughly 50 million school, college, and university going students. Before that only symptomatic testing was being done. The net result is we are seeing a rise in testing in mid-September 2020, and a proportional rise in cases. The real worry is the increase in some areas in the positivity rate.

Given that a globally available vaccine will likely not be available before early summer 2021, precaution and awareness are the best defenses against the virus.

Future of educational activities in wake of possible spikes

The aforementioned 50 million school, college, and university going students are back at their respective institutions. Resumption of educational activities was a challenging decision, and a necessary risk, as halting educational activities could have severe long-term repercussions. Another factor driving this decision is that Pakistan as a developing country does not have uniform access to technology in the form of high-speed internet and smart devices to allow for distance learning in every corner of the country.

It is pertinent to note however, that this was not done without preparation. The GOP, along with the Ministry of Education, Ministry of Health, the provincial governments, and the NCOC dedicated teams formulated very clear markers and parameters for reopening. This was also reflected in action, as with the opening of educational institutes, 22 of them were closed within first 48 hours over the violation of COVID-19 SOPs.

There are several tiers to the decision-making process for shutting down an educational institution. First, there are micro-level actions of schools

[46] Testing people across the community, including those who are apparently well, in order to discover unseen transmission.

and colleges, where the administration has to take decisions themselves, depending on positive cases or lack of SOP implementation. Second, if the cases arise outside the student population, but within the same vicinity, that particular institution may be asked to shut down. Third, if there is spike at the district level, similar action could be taken across the district.

For this purpose, contact tracing and spatial tracking software has been developed and is being used to monitor the situation closely from NCOC and take data-based informed decisions.

Challenges and Key Lessons

The fight against COVID-19, while commendable, has also laid bare the many deficiencies of the system.

First and foremost is the deplorable state of healthcare infrastructure in the country. At the start of the pandemic there was an acute and alarming shortage of Intensive Care Unit (ICU) beds and critical care specialists across the country. There were also shortages of medical equipment, ventilators, and Personal Protection Equipment (PPE). There is a woefully small number of epidemiologists in the country, who are crucial to help track and trace infectious diseases. While many of these issues have been overcome under the NCOC leadership, they remain powerful and painful reminders of the de-prioritization of one of the most critical components of a welfare state: public healthcare infrastructure.

An additional point within the larger healthcare issue is that Pakistan is signatory to the International Health Regulations (2005). This requires us to have some core capacities to thwart, identify, and combat health threats. The Joint External Evaluation in 2016 sponsored by the WHO provided comprehensive recommendations across 19 technical areas, including pandemic preparation. There was no implementation on it until the COVID-19 pandemic hit, signifying the need to revisit the document and act on it.

Second, while the NCOC has emerged as a bold, competitive response to the pandemic, its very existence calls into questions the efficacy and efficiency of various bodies in the country, principle among them the NDMA. The NDMA Act of 2010 established a robust Commission chaired by the prime minister and all chief ministers. This group had not met in two years prior to the pandemic. Similarly, the federal body responsible for screening and quarantining at the 19 main points of entry into the country (an early step in curbing the spread of the pandemic), is the Central Health Establishment (CHE). The pandemic situation clearly showed the need for drastic and swift reform to overcome the many limitations of the body.

It is ironic that a major source of international embarrassment for Pakistan, the fact that it remains one of two polio endemic countries in the world, provided the surveillance infrastructure needed to effectively track and trace virus clusters and hotspots. The NCOC was able to piggyback on the polio program, because no national digital integrated health information system existed outside it.

Finally, a significant lesson to be learned from the pandemic is that while inter-departmental and inter-agency coordination was adequate, the coordination between the federation and the provincial units needs a lot of work. The Federal Minister for the MPSI stated that federally devolved structures across the world have shown to exhibit weak, inconsistent responses against the pandemic, culminating in devastating results. This is further supported by Dr. Zafar Mirza, former SAPM on Health, in that horizontal collaboration worked well, while vertically there were significant challenges to overcome the limitations posed by the 18th amendment.

COVID-19 and Global Vaccination Efforts

The global attempts at combating COVID-19 are underway with 150 vaccines under development[47]. The World Health Organization (WHO) is at the forefront of coordinating these efforts and aims at delivering two billion doses worldwide by the end of 2021. The normal duration for a vaccine to be marketable is 10-15 years, given the lengthy trial and regulatory stages. However, in case of the COVID-19 vaccine, the usual three phased trials conducted gradually with different sets of target population, are being carried out simultaneously to ensure the speedy development and delivery.

Unfortunately, Pakistan does not have the level of scientific know-how to carry out development of a vaccine on its own. There are only a handful of countries in the world which are in the race for vaccine development. However, Pakistan in collaboration with China, will partake in vaccination trials. Pakistan's participation is important, because if the vaccine is approved for mass production, then Pakistan being a participant during the trial process would help the country in procurement.

Some of the more promising COVID-19 vaccines that have entered phase three trials with some entering into further stages are as follows:

Oxford University and Astra Zeneca (UK)

Oxford university in collaboration with pharmaceutical company Astra Zeneca is developing a vaccine known as ChAdOx1 nCoV-19. The vaccine has entered phase three trails with volunteers across the UK, Brazil, US, and South Africa.

Moderna Therapeutics and NIH (US)

Moderna therapeutics a US based bio-tech company in collaboration with US National Institutes of Health (NIH) is working on a vaccine labelled as mRNA-1273. The vaccine is in its phase three trials with 30,000 US participants. The initiative aims at delivering 500 million doses of the vaccine each year starting 2021.

[47] National Geographic. (October 08, 2020). Dozens of COVID-19 vaccines are in development. Here are the ones to follow. https://www.nationalgeographic.com/science/health-and-human-body/human-diseases/coronavirus-vaccine-tracker-how-they-work-latest-developments-cvd/

Pfizer and BioNtech (US)

US based Pfizer and German BioNtech, are collaborating to develop the BNT162b2 vaccine. The vaccine is currently under the combined phase two and three trials and it would tested on 30,000 participants across 39 states of the US, and in Brazil, Germany, and Argentina. It has set its target at provision of 1.3 billion doses by the end of 2021.

Murdoch Children Research Institute and University of Melbourne (Australia)

Murdoch Child Health Research Institute and University of Melbourne are working on Bacillus Calmette-Guerin to find its effectiveness against COVID-19. The research on this vaccine is in third phase of its trials.

Sinovac (China/Brazil)

The Chinese pharmaceutical company along with Brazilian Research Center Buntantan is working on the Corona Vac vaccine. It has cleared phase two trials and is entering third phase of its trial, where it would be tested on 9,000 healthcare professionals in Brazil. Tests would also be conducted in Bangladesh and Indonesia.

Sinopharm (China)

The Chinese state-owned Sinopharm in collaboration with Wuhan Institute of Biological Products are developing a vaccine against COVID-19[48]. The company has undergone phase three trials in UAE, Peru, and Bahrain.

CanSino Biologics (China)

Can Sino, a Chinese pharmaceutical company is working on Ad5-nCoV vaccine. Can Sino has made available its vaccine for military use in China, where it was still in its phase two trials. It has recently entered into its third phase trial in Russia.

[48] Al Jazeera. (2020, September 08). Sputnik V: What we know about Russia's coronavirus vaccine. https://www.aljazeera.com/news/2020/09/08/sputnik-v-what-we-know-about-russias-coronavirus-vaccine/

The Gamaleya National Center of Epidemiology and Microbiology (Russia)

The Russia based research institute has developed a vaccine named Sputnik-V and claims it to be the first registered vaccine against COVID-19. However, the vaccine has not undergone its third phase trials and has raised concerns among the health experts around the globe about the public use of vaccine without passing proper trials.

Conclusion

All things considered, Pakistan's struggle against the pandemic has been a remarkable case of overcoming a wide array of hurdles to achieve desired effects. Whether it is the crumbling health infrastructure, or the provincial-federal coordination, or the lack of initial infrastructure to combat the menace, Pakistan seems to have taken data-driven, empirical decisions that walk a fine line between economic stability and prevention of loss of life.

Despite the demonstrable success of the curbing mechanisms, this is no time to celebrate or drop our collective guard. The threat of the COVID-19 pandemic is very real and ever-present. Continued caution and stringent adherence to COVID-19 SOPs are crucial to ensure the current situation stays under control. Without vigilance from every member of the general public, and continued pressure from the government, this disease could spread easily and wreak havoc.

It must also be said that the pandemic has identified some significant, systemic flaws that need a concerted, logical fixes. Strike while the iron is hot, goes the proverb, and in the case of Pakistan, the time for change in critical areas such as healthcare infrastructure, internal coordination, and overcoming deficiencies in the law are all elements that should be addressed now, while the momentum is still there.

In addition, the pre-existing structures that need urgent reform and/or restructuring (such as the NDMA or the CHE) must happen now, while there is a recent, clear example of their bureaucratic mishandling/inability to tackle large-scale crises.

About CRSS

CRSS Background

The Center for Research and Security Studies (CRSS) is a think tank and advocacy center launched in September, 2007. Founded by noted security expert and media personality Imtiaz Gul, it is committed to the cause of independent research, nonpartisan analysis, and informed advocacy. As an advocacy center, CRSS is dedicated to trigger critical thinking through discourse anchored in global democratic values such as socio-political diversity, rule of law, equal citizenry, acceptance of diversity and fundamental human rights, all at the intersection of empirical research in security studies.

CRSS Core Values

CRSS strives to embed the national conversation in constitutionalism, and rationalize it over extremism and sectarianism. CRSS believes the path to peace and prosperity is through embodying the following:

- strict adherence to the rule of law, and stringent implementation;
- informing the public on civic education, especially good governance and public accountability;
- promoting equal rights for all citizens of Pakistan;
- championing women empowerment;
- providing training and opportunities to youth to veer them away from radicalization through critical thinking; and
- helping policymakers and lawmakers make informed decisions through empirical research

Along with time-tested methodologies in strategic communications, impactful message development, research, and advocacy, CRSS believes these core values can result in a more tolerant and cohesive Pakistan. You can find past and current CRSS projects by visiting our website (www.crss.pk).

CRSS Publications

CRSS produces several publications annually. Our flagship is the Annual Security Report, a measure of the state of security in Pakistan by gauging the number of violence-related casualties across the country. In addition, our most recent publications included a report on urban disaster management in Karachi, a report on the cost of judicial activism, and a report on fixing FIR related issues in Pakistan's police systems.

You can find all of our publications on our website: https://crss.pk/story/category/publications.

CRSS also regularly publishes papers, commentary and analysis by our research fellows from around the world. You can find all of our publications freely online or collect copies free of cost from our offices in Islamabad. You can also visit the CRSS blog (crssblog.com) as well as the website of our sister organization Afghan Studies Center (www.afghanstudiescenter.org).

Center For Research & Security Studies, Islamabad

14-M, Ali Plaza, Second Floor,
Behind Total Petrol pump and F-8 court,
Next to wi-tribe Head Office, F-8 Markaz, Islamabad
Tel: +92-51-831-4801-03 Fax: +92-51-831-4804
E-mail: mail@crss.pk, web: www.crss.pk

Flat 306, 3rd Floor, Badṣhah Tower,
Bara Road, Peshawar Cantt.
Tel: 091-5252311-12
Fax: 091-5252310