Assessing the Indirect Effects of COVID-19 on Essential Health and Nutrition Services in selected rural and urban settings of Bangladesh

A Qualitative Study

June 2021

Acknowledgements

The World Bank commissioned Oxford Policy Management (OPM) to research the indirect effects of COVID-19 on Essential Health and Nutrition Services (EHNS) in selected rural and urban settings of Bangladesh. OPM collaborated with Development Research Initiatives (dRi) to carry out this research.

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List of abbreviations

AHI	Assistant Health Inspector
ANC	Antenatal Care
BDHS	Bangladesh Demographic and Health Survey
BP	Blood Pressure
BRAC	A Non-Governmental Organisation
CC	Community Clinic
CHCP	Community Healthcare Provider
COPD	Chronic Obstructive Pulmonary Disease
COVID-19	Corona Virus Disease 2019
DGFP	Directorate General of Family Planning
DGHS	Directorate General Health Services
DH	District Hospital
DHIS 2	District Health Information System version 2
DMCH	Dhaka Medical College Hospital
DNCC	Dhaka North City Corporation
DOTS	Directly Observed Treatment Short-course
dRi	Development Research Initiative
ECP	Emergency Contraceptive Pill
EHNS	Essential Health and Nutrition Services
EPI	Expanded Program on Immunisation
FGD	Focus Group Discussion
FCDO	Foreign, Commonwealth & Development Office
FP	Family Planning
FPI	Family Planning Inspector
FWA	Family Welfare Assistant
FWV	Family Welfare Visitor
GAC	Global Affairs Canada
GNI	Gross National Income
HA	Health Assistant
HI	Health Inspector
IDI	In Depth Interview
IEDCR	Institute of Epidemiology, Disease Control and Research
IUD	Intra-Uterine Device
KIIs	Key Informant Interviews
MCH	Maternal and Child Health
MCWC	Mother and Child Welfare Centre
MIS	Management Information System
MNCAH	Maternal, Neonatal, Child and Adolescent Health
MO	Medical Officer
MOHFW	Ministry of Health and Family Welfare
NCD	Non-Communicable Diseases
NGO	Non-Governmental Organisation
OPM	Oxford Policy Management
OP	Oral Pill
PNC	Postnatal care
PPE	Personal Protective Equipment
RMNCAH	Reproductive, maternal, neonatal, child and adolescent health
RMO	Residential Medical Officer
RT-PCR	Reverse Transcription Polymerase Chain Reaction
SACMO	Sub-Assistant Community Medical Officer

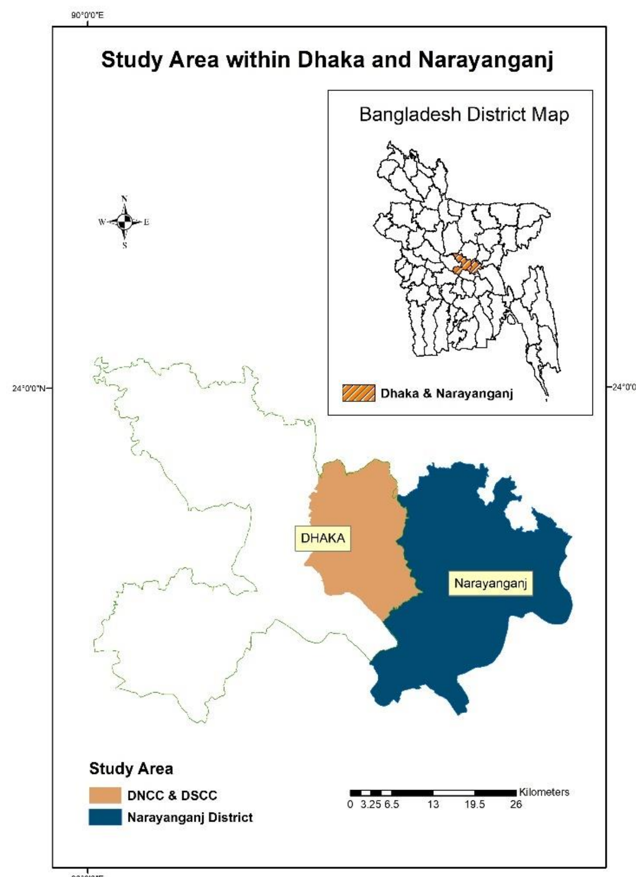
SC	Satellite Clinic
TB	Tuberculosis
UFPO	Upazila Family Planning Office
UH&FWC	Union Health and Family Welfare Centre
UHFPO	Upazila Health and Family Planning Officer
UPHC	Urban Primary Healthcare
USA	United States of America
USAID	United States Agency for International Development
UzHC	Upazila Health Complex
VIP	Very Important Person
WHO	World Health Organization

Executive Summary

The COVID-19 pandemic infected 219 countries and territories around the world and had multidimensional effects on all facets of life. Bangladesh was no exception. Without known treatment and vaccine, the world tried preventive measures to curtail the spread of the infection. Since the virus is transmitted through human contact, one popular measure was strictly controlling the mobility of people, often through lockdown for a specified period/area. In Bangladesh, a nationwide lockdown was imposed from 26 March to 30 May 2020. Local lockdowns of varied durations were also implemented. Following lockdown, transport operations were limited to half capacity for some time to maintain physical distance. This mobility restriction, along with other issues like fear and stigma of the disease, and focused attention of the health system on COVID-19, affected utilization and access to other healthcare services.

The World Bank commissioned Oxford Policy Management (OPM) to study the indirect effects of COVID-19 on Essential Health and Nutrition services (EHNS) in selected rural and urban settings of Bangladesh. OPM collaborated with Development Research Initiatives (dRi) to carry out this study. The study was carried out in selected areas of Narayanganj district and Dhaka North City Corporation (Figure 1).

Figure 1 Map of the geographical areas in the study



The **objectives of the study** were to: (i) assess the supply-side challenges and opportunities for EHNS provision, utilisation, and coverage; (ii) assess the demand-side challenges and opportunities for EHNS utilisation, care-seeking practices and continuum of care; and (iii) propose relevant recommendations arising from the analysis. The methodology comprised both primary and secondary data analysis; the former included: (a) n-depth interviews with different service providers (all tiers of government system, NGO and private) and with the community leaders, (b) focus group discussions with different categories of service providers; and (c) key informants interviews with various stakeholders.

Services of interest under the study were reproductive, maternal, neonatal, child and adolescent health (RMNCAH), tuberculosis (TB) and non-communicable diseases (NCDs). **Themes explored** included service provisions, coverage and utilisation, continuum of care, quality of care, reporting, barriers, and coping mechanisms. **Data were collected** between February 2021 and March 2021. There were some limitations to the data, as they were collected nearly 1 year after the pandemic started. As such, many of the service providers involved in the early part of the pandemic were unavailable, and with COVID-19 vaccination ongoing, many of the intended respondents were also unavailable. **Key findings, disaggregated by thematic areas, are summarized below.**

Service provision was curtailed, particularly during the earlier part of the pandemic and lockdown. Family Planning (FP) field workers' home visitation was suspended for 2 weeks, and Satellite Clinics (SCs) and EPI outreach sessions were put on-hold for more than 2 months. Even when the FP field workers started home visitations, in many cases, they were not allowed to enter households; this restricted short-acting contraceptive service provision. Long-acting FP methods also suffered, due to fear among service providers, which translated into their desire to maintain distance from the clients. SCs and EPI outreach sessions, often conducted in the houses of people in the community, as those clinics/sessions are crowded with attendants, were not allowed during the initial lockdown period, due to fear of spreading COVID-19. Meanwhile, community clinics and Union Health and Family Welfare Centres (UH&FWCs) continued operating, but as service providers took measures to maintain safe distance from clients/patients, and access to transportation became a challenge, service provision to non-COVID-19 cases were hampered.

Following the dedication of the Narayanganj 300-bed hospital for COVID-19 cases, for example, service provision to other patients was effectively halted. Similarly, at Dhaka Medical College Hospital (DMCH), service provision to non-COVID-19 cases was restricted. Brac 'Sebikas' stopped collection of sputum samples for TB case detection, due to problems with transportation of samples for testing due to the lockdown. NGO facilities like Smiling Sun Clinic were closed during the initial days, and private hospitals in Dhaka, Narayanganj, and Rupganj provided limited services. Some druggists/pharmacists, both urban and rural, initially imposed restrictions in providing services which required physical touch, such as measuring temperature, weight, blood pressure or diabetes. This restriction was similar for some village doctors but eased over time as service provision returned to a new normal.

Service provision disruptions were also compounded by inappropriate and inadequate knowledge regarding risk communication among patients and health workers. Once the Rupganj Upazila Health Complex (UHC) began admitting COVID-19 patients, for example, all other admitted patients fled. Meanwhile, the Narayanganj District Hospital (DH) was

placed under lockdown for a period due to the infection of some of their health workers. *Coverage and utilisation* reduced substantially during the early period of the pandemic and lockdown, then gradually picked up, but remained low in comparison to the previous year. This was true for all services (contraceptives, antenatal check-ups (ANC), institutional delivery, postnatal check-ups (PNC), immunisation, diarrhoea and pneumonia treatment, adolescent treatment for reproductive tract/sexually transmitted infections, TB case detection and NCD care). The only coverage which remained unaffected was free sanitary napkin distribution to adolescent girls.

Limited demand coupled with service provision restrictions and disruptions, contributed to low coverage. Notably, coverage was low during the early part of the pandemic and lockdown, but not during the peak of the pandemic when service utilisation was seen to be increasing. This suggests that fear and limited access to transportation were greater determinants of demand for health services, than the pandemic situation. Similar findings were reported in other studies in Bangladesh, and found in India, Pakistan, the Middle East, Africa, Australia, Europe, Canada, Latin America and the United States.

Continuum of care was disrupted for all services, due to service provisions restrictions and disruptions and service seekers were constrained, particularly during lockdown and transportation restriction periods. Switches in contraceptive methods were reported by interviewees. Deferred ANC, more home deliveries, switching of service providers, disruptions in child immunisation, and following old prescriptions for hypertension, diabetes and COPD were found. DOTS for TB remained unaffected. Gradually, continuum of care was restored, but remains limited as both service providers and service seekers remain cautious for service provision and utilization, respectively.

Quality of care was perceived by both service providers and service seekers as sub-optimal. Switching service seekers and contraceptive methods from preferred ones to available ones, was perceived as a quality issue by the service seekers, along with limited service availability and disruptions in the services provided. Service seekers, for example, expressed concerns that they were not adequately physically examined and received services without proper interaction, as both they and service providers wore masks, and service providers maintained a safe distance behind a glass barrier. Tele-consultation was also described by service seekers as compromising quality. Service providers confirmed the views of care seekers in terms of a reduction in the quality of care. This, they attributed to their inability to adhere to standards (for example, having to provide care without properly examining patients) as well as limited numbers of health workers.

Reporting at different levels (including community activities) and government facilities was found to be unaffected by the pandemic even during the lockdown and early stages of the pandemic. This was because most reporting was done online or via mobile devices, thus it was not impacted by restrictions on mobility.

Barriers experienced and *coping strategies adopted* by service providers and service seekers are presented in

Table 1.

Table 1: Barriers experienced, and coping strategies adopted by service providers and service seekers

Service Providers		Service Seekers	
Barriers	**Coping**	**Barriers**	**Coping**
Fear of being infected and implications over family	Commitment to professional obligation	Fear of being infected with associated stigma and home lockdown	Deferring service seeking
Lack/limited/improvised personal protective equipment (PPE) and other sanitary measures in the beginning of pandemic	Securing PPE on their own initiative and at their own cost	Crowded health facilities were a source of COVID-19 infections	Switching service providers
Transport unavailability and high cost in attending workplaces	Communicating over mobile phones	Non-availability of transport and high fares of available transport	Communicating through mobile phones
Harassments from law enforcing agencies while commuting to workplaces	Supplying contraceptives to the neighbourhood of any designated person	Blockades on commuting routes	Following old prescriptions
Hostile neighbourhoods	Holding SCs and EPI outreach in closed schools	Non-availability of preferred service providers	Incurring extra cost met through borrowing
Unwelcoming attitude of house owners toward field workers regarding home visitation and holding SCs and EPI outreach sessions	Adjustment in family expenses to accommodate extra transportation cost	Loss of income	
Non-compliance of service seekers with COVID-19 health regulations, particularly wearing masks and maintaining distance	Counselling service seekers for health regulations of COVID-19	Service provision with no physical examination and while maintaining distance	
Shortage of service providers	Working for extra hours	Non-availability of NCDs medicines at community clinics and union level facilities	
Service providers engaged with other assignments than what they were supposed to be engaged with			

The study found that selected EHNS (RMNCAH, TB, NCDs) were affected in both selected urban and rural settings in Bangladesh during the COVID-19 pandemic. The effects were greater during the early stage of the pandemic and lockdown period (26 March – 30 May) than compared to the stage afterwards, when the infection rate was rising but service utilisation was recovering. Still, EHNS coverage in 2020 was lower than in 2019. The effects were larger

in rural settings than in urban settings, owing to the greater availability of service providers in the latter. Women were also more effected than men, due to restrictions in mobility and a lack of economic power.

Recommendations on the demand side is formation of area-based local health support groups, comprised of suitably trained volunteers to provide support in promotive, preventive, curative, rehabilitative and palliative care. The groups need to be linked with the formal government health system.

Recommended responses and initiatives on the supply-side includes equipping each disease/thematic health program (e.g., Maternal and Child Health (MCH), TB, NCD) to address EHNS in pandemics with inter-sectoral and private sector collaborations like law-enforcing agencies may facilitate service providers movements, media can aware people and reduce false fear about the pandemic, private sector may support service providers movements by providing idle (due to mobility restrictions) vehicles, also provide accommodation near the service facilities in their un-used (due to lock-down) hotels etc.; all health workers need to be trained (basic and then periodical refresher) on infection prevention and control (IPC) procedures and supplied regularly with proper logistics (PPE, sanitizers etc.) to enforce the practice of IPC; the Ministry of Health and Family Welfare's (MOHFW) health system needs to address all the known problems (related with human resources like shortage, mal-distribution, skill-mix imbalance, negative work environment etc., shortage and non-functioning equipment etc., shortages of medicines etc.) from which it had been suffering and which once again surfaced during the pandemic; and the MOHFW's ability to harness the potential of non-government sector needs to be strengthened through stewardship and regulatory roles so that it can capitalise on the vast majority resources of the non-government sector in a planned manner as needed by assigning roles and responsibilities of comparative advantages due to location, human resources, equipment and other logistics.

1 Introduction

1.1 COVID-19: Global situation

In late December 2019, in Wuhan of Hubei province of China, patients with viral pneumonia of an unknown antimicrobial origin were reported (Angoulvant et al., 2021). On 4 January 2020, China reported a cluster of pneumonia cases in Wuhan to the World Health Organization (WHO) (Gale, 2020). The WHO reported that the outbreak was caused by Novel Coronavirus, as confirmed by the Chinese authorities on 9 January 2020 (WHO, 2020). The WHO announced COVID-19 (coronavirus disease 2019) as the name of this new disease on 11 February 2020 (WHO, 2020).

On 11 January 2020, Chinese state media reported the first known death from the virus (WHO, 2020). On 13 January 2020, Thailand reported the first confirmed case outside of China (WHO, 2020). Following this, on 16 January 2020, a second case outside China was confirmed by Japan (Wikipedia contributors, 2021). On 21 January 2020, the WHO confirmed that, based on the evidence, it was clear that “human-to-human” transmission was involved, as the USA confirmed its first case (WHO, 2020). Within one week, cases were identified in Japan, South Korea, the USA, Taiwan, Hong Kong, Macau, Singapore, Vietnam, France and Nepal. By the next week, disease transmission had occurred on almost all continents, barring Africa (Wikipedia contributors, 2021).

On 30 January 2020, the Director-General of the WHO declared that novel Coronavirus constituted a Public Health Emergency of International Concern, the WHO’s highest level of alarm (WHO, 2020). The WHO declared COVID-19 a global pandemic on 11 March 2020 (Cucinotta & Vanelli, 2020).

In response to the pandemic and in the initial period, countries have adopted different ways to contain the spread of COVID-19, but there is no one-size-fits-all approach (Johnny Wood, 2020). Towns and cities have been locked down and large gatherings have been banned. Restrictions have been imposed on travellers from hard-hit areas, both outside the countries and within countries. Major sporting events, carnivals and events have been postponed or cancelled. At the epicentre of the outbreak, during 22-27 January 2020, China adopted aggressive measures to contain the virus, including city lockdowns, travel restrictions, extending school breaks and closing theatres, sporting events and other public venues (People's Republic of China, The State Council Information Office, 2020). On 1 February, 2020, the USASA government prevented entry of anyone who had visited China in the prior 14 days (BBC News, 2020). Twelve US states declared a state of emergency after deaths associated with COVID-19 in these states on 11 March 2020 (Günerigök, 2020). As of 26 February 2020, South Korea had the most cases of any nation (initially) outside of China (Firstpost, 2020). To reduce transmission, strict self-isolation requirements were put in place throughout the country, with fines or a potential prison sentence for violations. Meanwhile, Japan closed all elementary, middle and high schools, thereby impacting millions of students. The threat posed by the pandemic also forced the postponement of the Tokyo 2020 Olympic Games.

As of 7 April 2021, COVID-19 has affected 219 countries and territories of the world with a total of 133,675,469 cases and 2,900,323 deaths, with the USA (cases: 31,637,243 and deaths: 572,849), Brazil (cases: 13,197,031 and deaths: 341,097) and India (cases: 12,926,061 and deaths: 166,892) being the top three affected countries (Worldometer, 2021).

1.2 COVID-19: Bangladesh situation

In response to COVID-19, on 22 January 2020, authorities put the Dhaka airport on alert and started screening travellers from China (Wikipedia contributors, 2021). On 1 February, a special flight from Bangladesh evacuated 312 Bangladeshi citizens stranded in Wuhan. The evacuees were quarantined for 14 days at the Ashkona Hajj Camp in Dhaka and other locations. None tested positive for COVID-19. On 8 March, the first three COVID-19 cases were confirmed: 2 men (from Narayanganj) and 1 woman (from Madaripur). The patients were aged between 20 and 35. Of these, the two men were Italian returnees and the woman was a family member of one returnee. On the same day, Bangladesh decided not to hold the planned grand inauguration ceremony of the Father of the Nation Bangabandhu Sheikh Mujibur Rahman's birth centenary celebration programs on 17 March in order to avoid public gatherings. From 17 March 2020 till date, all educational institutions have been closed. On 18 March, Bangladesh reported its first COVID-19 death. The patient was aged over 70 and had co-morbidities.

On 19 March, Bangladesh imposed its first lockdown in Shibchar municipality and three unions of Shibchar upazila, under Madaripur district, to contain the spread of COVID-19 after 9 people from the area tested positive. On 20 March, the Daulatdia brothel, one of the largest brothels in the world, was ordered to close. On 21 March, the second COVID-19 death in Bangladesh was announced. The death of this 70-year-old man is likely the first known death from community transmission. The cause of his infection was unknown. Following his death at the nearby Delta Medical Hospital, the authorities locked down the Tolarbagh neighbourhood of Mirpur, Dhaka. On 22 March, the Higher Secondary School Certificate (HSC exam), which was scheduled to begin from 1 April, was postponed. On 23 March, one physician and two nurses were declared to be COVID-19 positive. On the same day, the government announced the closure of all government and private offices from 26 March to prevent the spread of the virus. Only emergency services such as law enforcement and healthcare services were exempted. It was also announced that the armed forces would be deployed from 24 March to ensure that people maintain social distancing and quarantine to prevent the spread of the virus. On 24 March, the government announced a ban on all passenger travel via water, rail, and domestic air routes from 26 March.

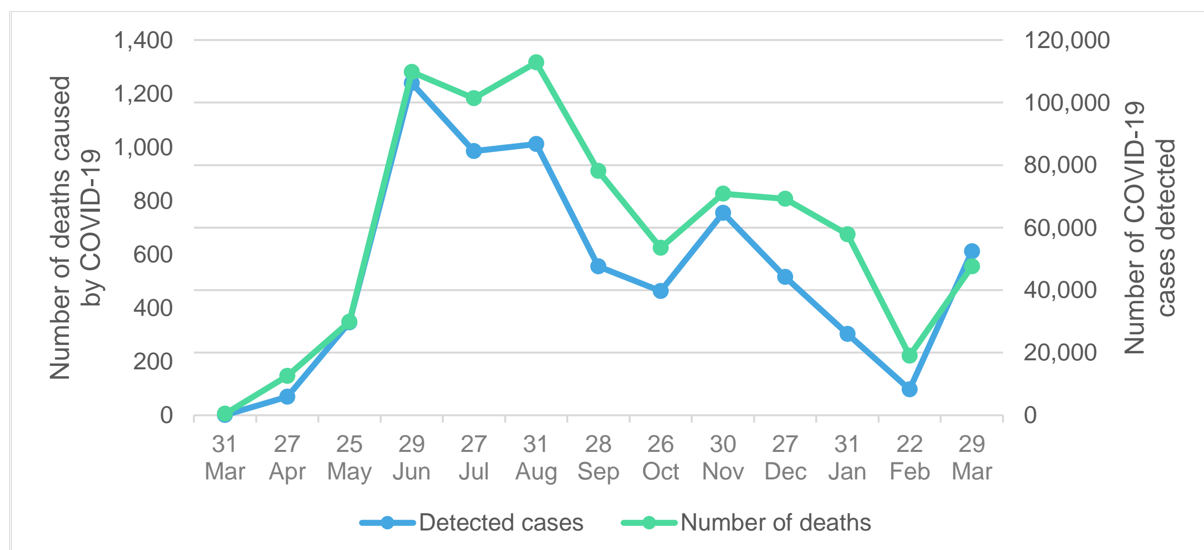
On 7 April, the Prime Minister announced special insurance and stimuli for COVID-19 frontline workers (doctors and nurses of government hospitals, health officials, etc.) (The Business Standard, 2020). On 15 April, the death of the first physician from COVID-19 occurred in Bangladesh (bdnews24.com, 2020). The government appointed 2,000 doctors at entry level to fight the ongoing COVID-19 crisis with a start date of 12 May (The Daily Star, 2020) and 5,054 nurses were also recruited, with a start date of 13 May (UNB, 2020). On 04 June, the Prime Minister approved the creation of new posts and recruitment of 1,200 medical technologists, 1,650 medical technicians and 150 cardiographers (The Daily Star, 2020).

On 28 May, the government announced that all offices would re-open and public transport services would resume on a limited scale from 31 May. On 31 May, the total COVID-19 cases rose to 47,153 (Figure 2), with total deaths at 650. On 3 August, the government extended the period of restriction on overall activities/movements until 31 August. On 21 June, following the 2018 Infectious Diseases (Prevention, Control and Eradication) Act, some areas in 10 districts of the country were declared as Red Zones, with lockdown in those areas for 21 days (DGHS, 2020).

The Institute of Epidemiology, Disease Control and Research (IEDCR) developed its capacity for COVID-19 RT-PCR testing with technical support from WHO in the first week of January 2020. The laboratory testing officially started on 16 January, with samples being collected through surveillance centres and from homes of suspected patients identified through hotline calls. Between end-March and end-June, the number of laboratories increased from 6 to 68 (DGHS, 2020). As of 7 April 2021, 243 labs were operational[1].

As of 7 April 2021, 666,132 COVID-19 cases were identified with 9,521 deaths in Bangladesh (DGHS, 2021).

Figure 2: Time-series of COVID-19 cases and deaths in Bangladesh



Sources: WHO Bangladesh COVID-19 Situation Reports

1.3 COVID-19: Narayanganj situation

Narayanganj, a district comprising 5 upazilas (sub-districts), is located in the Dhaka Division in the centre of Bangladesh. This is an important industrial hub, with the garment and textile sectors being the main source of employment. It is the home to major knitwear, and woven ready-made garments factories, textile industries, chemical industries, food processing and

[1] This included: 121 RT-PCR (52 government and 69 non-government); 34 Gene Xpert (32 government and 2 non-government); and 88 Rapid Antigen (all in government) (DGHS, 2021).

beverage industries, cotton mills etc. The district is ranked third in the nation in terms of Gross National income (GNI) and possession of wealth.

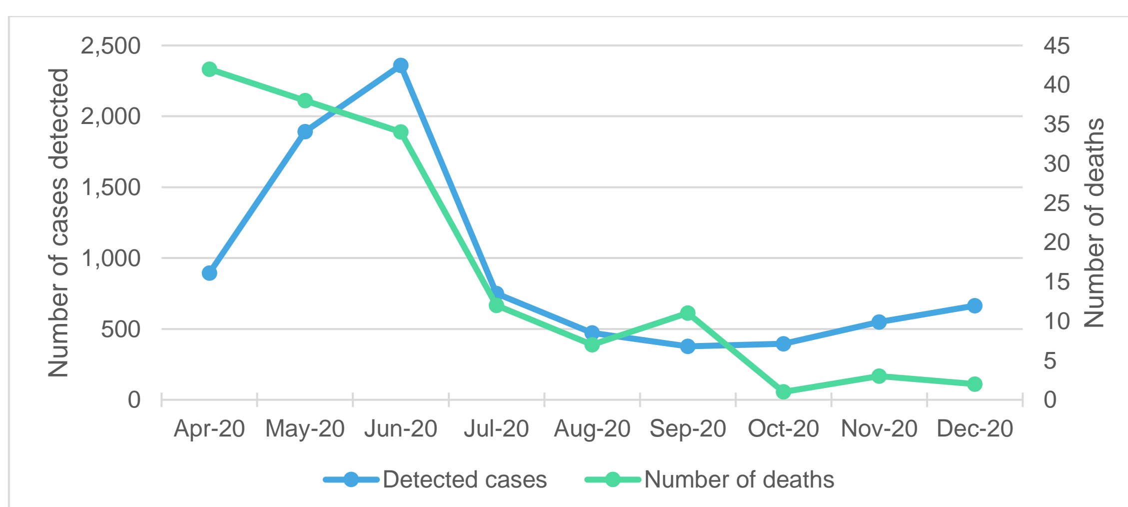
As noted above, two of the three COVID-19 cases detected in Bangladesh on 8 March 2020 were from Narayanganj. When the government declared a general holiday due to COVID-19 infection from March 26 to control the spread of the virus and ensure social distancing, millions of people left Dhaka to spend the holidays with family, with little adherence to social distancing measures, thereby providing a catalyst for community transmission. On 3 April, 100 families in Narayanganj were placed in self-isolation. As IEDCR declared Narayanganj a cluster area for infection, the district was put under lockdown on 7 April 2020. Despite the lockdown, thousands of people left Narayanganj, further increasing transmission throughout the country (Karim & Haque, 2020).

By 10 April 2020, three Narayanganj district health officials were found to be COVID-19 positive: the Civil Surgeon of Narayanganj, and the Upazila Health and Family Planning Officers of Sadar and Bandor (Rita, 2020). Amid the nationwide shutdown to contain the COVID-19 outbreak, 191 factories (including 81 garment factories) resumed operation in Narayanganj on April 26, 2020 in an effort to restore economic activities, while the district recorded 625 confirmed cases and 41 deaths[2] on that day (Figure 3) (Dhaka Tribune, 2020).

By 22 May 2020, Dhaka division had 76% of the COVID-19 patients in the country. Among its districts, Dhaka had 79% of the patients, followed by the Narayanganj with 10%. Narayanganj, the neighbouring district of Dhaka, became the epicentre of COVID-19 infection in Bangladesh, as most patients originated from this district. COVID-19 patients who were returnees from Narayanganj in May 2020 were detected in many districts.

The timeline of COVID-19 key events in Bangladesh and specific to Narayanganj are described in Annex A.

Figure 3: Time-series of COVID-19 cases and deaths in Narayanganj



Source: Civil Surgeon Office, Narayanganj

[2] Most of these fatalities were from Narayanganj Sadar upazila and city corporation areas

Study Objectives

The aim of the study is to carry out a qualitative assessment of the indirect effects of COVID-19 on EHNS, with specific focus on RMNCAH[3] provision, coverage, utilisation and care-seeking. Specifically, the objectives are to:

1. Assess the supply-side (including community-system level) challenges and opportunities for EHNS provision, utilisation, and coverage.
2. Assess the demand-side challenges and opportunities for EHNS utilisation, care-seeking practices and continuum of care.
3. Propose relevant recommendations arising from the analysis, e.g. options for the demand-side adoption of key measures and supply-side responses and initiatives that could be relevant for the government in EHNS and RMNCAH policy-making and equally relevant for the World Bank operations in the near future.

Study period and location

The period of study was from January 2020 - December 2020. The study was initiated with a focus on the Dhaka division and Narayanganj district, followed by the random selection of Rupganj upazila, Bholabo union and Pubergaon village from the Narayanganj district. To have coverage of both rural and urban settings, ward number 4 of Dhaka North City Corporation was included randomly and Dhaka Medical College Hospital (DMCH) was chosen purposively.

Organization of the report

There are ten chapters in this report. Chapter 1 discusses the COVID-19 situation. The methodology of the study is described in Chapter 2. Chapters 3-9 detail the findings and discussion on service provision, coverage and utilisation, continuum of care, quality of care, reporting, barriers and coping faced by service providers and seekers. Conclusion and recommendations are described in Chapter 10.

[3] It includes Tuberculosis and non-communicable diseases

2 Methodology

This study sought to understand the indirect effects of COVID-19 on EHNS in Bangladesh. It focused on RMNCAH, TB and NCDs (diabetes II, hypertension and Chronic Obstructive Pulmonary Disease (COPD)), and considered service provision, coverage and utilisation, continuum of care, quality of care, reporting, barriers and coping strategies. A working definition of these themes is provided in Annex B.

2.1 Methods

Data collection methods included in-depth interviews (IDI), key informant interviews (KII) and focus group discussions (FGD). The team also reviewed relevant documents and literature. These included published and unpublished reports and secondary data. The different methodologies mapped against each objective of the study are outlined in Table 2. The full list of KIIs is outlined in Annex C.

Table 2: Objectives aligned with methodology

Objectives	Methodologies adapted
Assess the supply-side challenges and opportunities for EHNS provision, utilisation, and coverage.	**IDIs** of different types of service providers: • government health and family planning fieldworkers (health assistant (HA), assistant health inspector (AHI), health inspector (HI), family welfare assistant (FWA), family planning inspector (FPI); • facility-based workers (community health care provider of community clinic, family welfare visitor - FWV of union level health and family welfare centres, physician, nurse, midwife, laboratory technician of upazila health complex, district, medical college and other types of hospitals); • facility managers (upazila health and family planning officers, superintendent and director); • informal sector service providers (village doctor, quack); • drug shop sellers/pharmacist; and, • doctor of the private chamber, physician, nurse, and laboratory technologist of private/non-government health facilities. **KIIs** with: • senior government officials from the directorate general of health and family planning services (DGHS, DGFP); • Bangladesh chemists and druggist association; • private clinic and diagnostic centres owner's association; • prominent health personalities; • NGO service providers; • academics; • development partners; and • COVID-19 committees' members.

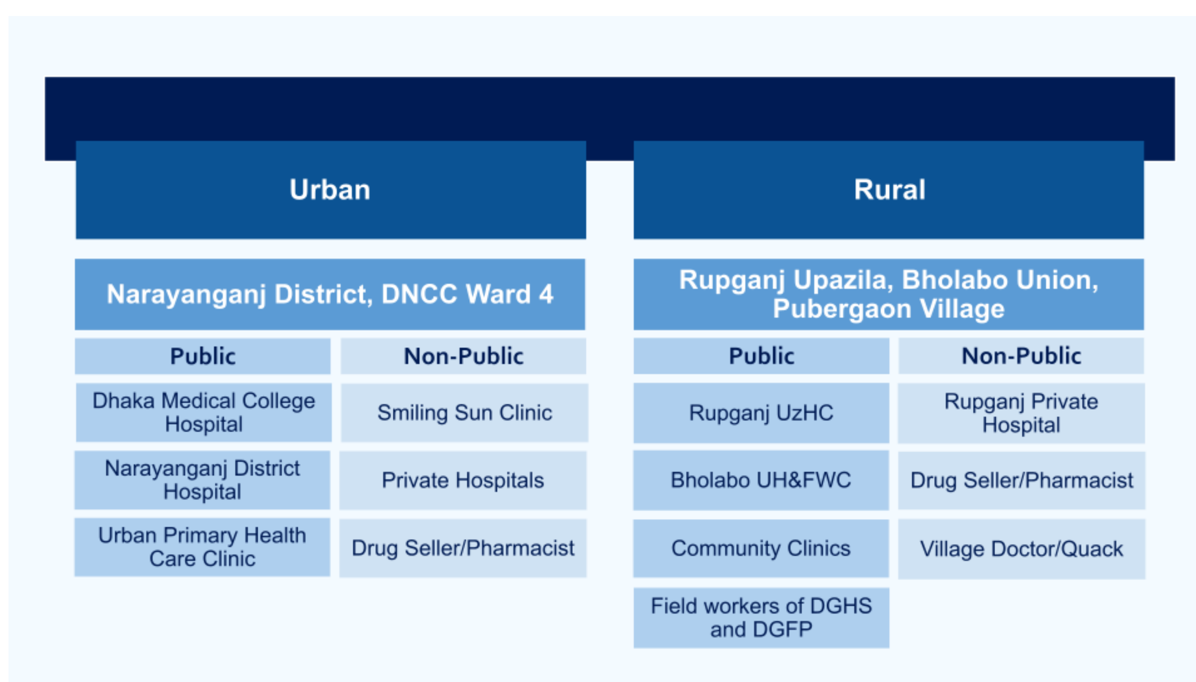
	FGDs with HAs, FWAs, FWVs, brac sebikas (DOTS providers) **Secondary data analysis** • Service statistics analysis for Narayanganj district, Rupganj upazila and DMCH from local health bulletins, DHIS 2 (DGHS); MIS of DGFP, EPI & National TB Program • Media scanning to record milestone events during COVID-19, both nationally and in Narayanganj district
Assess the demand-side challenges and opportunities for EHNS utilisation, care-seeking practices and continuum of care.	**FGDs** with: • pregnant women; • recent mothers (lactating) with newborn; • mothers of children aged less than 5 years; and • patients with TB, diabetes, COPD and hypertension at the village, union, upazila, district and DNCC levels. **IDIs** with community leaders (elected people's representatives at the ward, union, upazila and district levels) **KIIs** with • prominent health personalities; • academics; • development partners (e.g. World Bank, FCDO, USAID, GAC etc.); and • COVID-19 committees' members.
Propose relevant recommendations based on the analysis	Based on: • analyses of primary data to ascertain supply- and demand-side barriers; • secondary data analysis; and • feedback from draft report and dissemination workshop.

2.2 Sampling

The study was initiated with a focus on the Dhaka division, given that Dhaka had a much higher number of confirmed COVID-19 cases and deaths than other divisions. Within Dhaka, the Narayanganj district was purposefully selected, as it had a high number of confirmed COVID-19 cases and was declared the epicentre of the pandemic. The remaining administrative units within the Narayanganj district, one of each, were selected randomly. This included Rupganj upazila, Bholabo union and Pubergaon village. The secondary data collection (related to coverage and utilisation of EHNS) and analysis focused on the selected study areas.

To have coverage of both rural and urban settings, Ward 4 of Dhaka North City Corporation (DNCC) was included randomly from the wards of DNCC, and DMCH was chosen purposively. Details of the facilities and respondents selected across urban and rural study settings including both public and non-public facilities is listed in Figure 4.

Figure 4: Distribution of facilities and respondents across urban and rural sample



2.2.1 Sampling for Supply-side analysis

To understand the supply side effects of COVID-19 on EHNs, multiple IDIs and FGDs were conducted with service providers in urban and rural settings, including public and non-public institutes (Table 3). In addition, KIIs were conducted with respondents listed in Table 2. Supply-side themes explored through IDIs, KIIs and FGDs included service provision, continuum of care, quality of care, reporting, barriers and coping strategies.

Table 3: List of respondents providing healthcare services

	Urban		Rural	
	Public	Non-Public	Public	Non-Public
IDI: government health and family planning field workers			13	
IDI: facility-based workers	20	11	14	1
IDI: facility managers	2		1	
IDI: informal sector service providers				2
IDI: pharmacists and drug store salespersons		2		2
FGD: Health Assistants			1	
FGD: Family Welfare Assistants			1	
FGD: Family Welfare Visitors			1	
FGD: brac sebika (for DOTS)		1		1

2.2.2 Demand-side analysis

For the demand-side assessment of COVID-19 effects on EHNS, FGDs were conducted with health care seekers to discuss the different array of RMNCAH: FP, ANC, delivery, PNC, child

immunisation, diarrhoea, and ARI and TB and NCDs services. In addition, FGDs also took place with both male and female patients (Table 4). IDIs with community leaders, at different levels, were also conducted. Themes explored through the demand-side assessment included utilisation, continuum of care, quality of care, barriers and coping mechanisms.

Table 4: List of respondents seeking healthcare

	Urban		Rural	
	Male	Female	Male	Female
IDI Community Leaders	1	-	1	2
FGD: pregnant women	N/A	2	N/A	3
FGD: lactating mothers	N/A	2	N/A	3
FGD: Mothers of children under 5 years of age	N/A	2	N/A	3
FGD: TB patients	1	1	1	1
FGD: Diabetic patients	2	-	1	2
FGD: Hypertensive patients	2	-	1	2
FGD: COPD patients	2	-	1	2

2.3 Ethical considerations

In conducting the qualitative fieldwork, a set of ethical principles were followed, developed from previous work experience, as well as adapted from the Young Lives research ethics guidelines (Young Lives , 2011), which draws from existing literature on the governance of social research (Economic and Social Research Council, 2010).

- **Ensuring the safety of participants:** in particular, interviews were conducted in a physically safe environment, with social distancing maintained, and masks worn.
- **Recognising that participants are vulnerable:** this entails cognisance of local conditions, and respectfully conducted interactions with all respondents.
- **Ensuring that people understand what is always happening:** Researchers are familiar with the context and language so that the research was conducted in the appropriate language and dialect through fieldworkers who are familiar with local customs and terminology.
- **Clarifying the purpose:** this involves setting and communicating clear parameters for the interviews to the respondents, which includes clearly stating the purpose, the limits of the interview, and what follow up will entail.
- **Informed consent:** researchers provided potential respondents with information about the research. All researchers were trained to ensure no explicit or implicit coercion so that potential respondents can make an informed and free decision on their possible involvement in the fieldwork. Respondents were informed of their choice not to respond to all or any of our questions at any time. Researchers sought explicit oral consent from each respondent before carrying out any research activity.
- **Anonymity:** given that research respondents could share considerable amounts of personal information, it was their responsibility to ensure that their confidentiality was maintained and personal information is protected. This was operationalised by ensuring that all datasets were *anonymised*, in the sense that all names of people were removed before any data was shared publicly.

- **Trained researchers:** All interviews were conducted by trained staff and in conditions of privacy. Rigorous training was conducted on the data collection instruments in addition to interview protocols.
- **Ethical approval** of the study was obtained from the Institutional Review Board of the Institute of Health Economics, University of Dhaka, which is approved by Federal Wide Assurance (FWA), No. FWA00026031. The only feedback received and later incorporated was to change the study title to include 'selected rural and urban settings of Bangladesh' rather than overall Bangladesh.

2.4 Data collection

The IDI, KII and FGD guidelines were developed in English, then translated and printed in Bangla. A total of 26 guidelines were tailored for various health care providers and recipients. All tools were carefully reviewed to ensure the compilation of appropriate questions and language consistency.

Training of researchers

A total of six days of training from 13 to 18 February 2021 was held, including one full day of field testing. The first half of Day One was facilitated by the study team leader who explained in detail the Bangladesh health system structure, research background and objectives of the study.

Piloting the data collection tools

Piloting was conducted on the fifth day to assess the IDI and FGD guidelines. The primary benefit of piloting was to identify problems and issues that needed to be addressed before implementation of the full survey. Piloting included assessing the validity of each question (whether the question is capturing information, it is intended to measure to meet the goals and objectives of the study) and analysing the various aspects of the research tool (Chaudhary & Israel, 2014). The researchers and their supervisor piloted 16 IDI and 5 FGD tools at Savar Upazila Health Complex, Pathalia Union, Gerua village, Mirpur ward 12 and Kalyanpur Slum in DNCC area.

After piloting, issues raised in the field were discussed and incorporated in the guideline on the sixth day of the training. A day-long feedback session was held to restate guidelines and clarify any questions that arose during the pilot. These included:

- the importance and need to schedule interviews with health care providers, in advance, given their busy schedule in both treating COVID-19 patients, and providing vaccination;
- the non-availability of the UHFPO's office room at the UzHC for interviews (due to vaccinations of VIPs), which resulted in the need to find an alternative room;
- the absence of a nurse in the Smiling Sun Clinic; this resulted in the female paramedic being interviewed; and

Data Collection Period

After the research approval letter was provided by the MOHFW, data collection began on 20 February 2021, and most of the work was completed by 9 March 2021. Researchers initiated field work at Rupganj UHC, and then moved to Bholabo union and Pubergaon village. After

completing interviews in Rupganj upazila, the team then moved to Narayanganj. Later, the team came back to Dhaka to collect data at the DNCC.

Data collection was delayed at the DMCH as an internal ethical review was required by DMCH authorities before proceeding with the interviews. After receiving clearance, interviews were immediately conducted by the researchers during 7-13 April 2021.

Quality Control and Assurance Measures

A challenge in qualitative research is the definition and achievement of 'rigour', particularly when the research methodology should be open to the identification of new hypotheses, causes and unexpected impacts, and hence should contain an emergent dimension not fully prescribed at the outset. The study followed a protocol of ensuring rigour throughout the research as follows:

1. Experienced qualitative researchers were deployed (rather than field investigators) to carry out field work.
2. Quality assurance procedures were implemented during data collection (e.g. ensuring recording when permitted by interviewee, note-taking, debriefing).
3. Different members of the team were included in the analysis (during analysis and write-up), to ensure reliability and consistency in analysis, as well as to mitigate single-researcher bias.
4. Different data sources were compared.
5. The analysis was reviewed by an internal peer reviewer in OPM.
6. KIIs were conducted by the team leader.

All the data collected were treated as required in maintaining ethical standards, especially concerning anonymity and data security. Names and personal identifiers were excluded from field reports.

During the training session, mock interviews were conducted using different tools. This assisted the researchers in understanding how the actual interviews needed to be conducted. In the initial stage of data collection, the supervisor was present with each researcher to monitor quality and provide feedback.

Voice recording was requested for all IDIs and not for FGDs, as the latter were conducted by two researchers, one who facilitated the discussion while another took notes. For IDIs where voice recording was permitted by the respondents, researchers used the recordings to make field reports in Bangla immediately after to ensure efficient and effective notetaking. These Bangla field reports were then translated into English. After completion, all Bangla and English versions of field reports were cross-checked to ensure consistency and quality.

Overall, 30% of the IDIs did not permit recording. In those instances, two researchers facilitated the interview to ensure efficient note taking while the other conducted the interview. Both these practices reduced errors to a minimum.

Field challenges and solutions

The researchers faced some challenges in the field, which were resolved after discussions with the team leader. These are listed in the table below.

Table 5: Challenges faced by researchers and solutions derived

Tool	Challenges	Solutions
IDIs in Narayanganj District Hospital	The Narayanganj 300 Bed Hospital was dedicated to treatment of COVID-19 patients, so it could not be accessed	Instead of Narayanganj 300 Bed Hospital, IDIs were conducted in Narayanganj District Hospital
FGD with patients with TB (Pubergaon village)	There was only one TB patient found in Pubergaon village	FGD was conducted by gathering other TB patients from different villages in Bholabo union
FGD with EPI technologists	As COVID-19 vaccination was the highest priority from the government, EPI technologists were not allowed to leave their duty station	4 IDIs were conducted with EPI technologists instead of the FGD
IDIs in Urban Primary Healthcare Clinic (UPHC) in DNCC Ward 4	There is no UPHC clinic in DNCC Ward 4	The research team visited adjacent Ward 6 to conduct interviews at a UPHC Clinic.
IDIs in Private clinic, DNCC Area	No private clinic was found in DNCC Ward 4	The research team visited adjacent Ward 7 for a private clinic in DNCC.
FGD with brac *Sebikas*, DNCC Ward 4	There were no brac Sebikas in Ward 4	Interviews were instead conducted with brac Sebikas in Ward 15
IDIs in DMCH	The DMCH's internal review process of the research study took longer than expected, which resulted in a delay in the data collection at the DMCH	Approval was received on 4 March, and interviews were conducted during the nationwide lockdown. Some IDIs could not be done, as their priority was to manage the COVID-19 situation

Security and duty of care during COVID-19

Development Research Initiative (dRi) follows its own Health & Safety Policy to ensure a healthy and safe working environment for its workers, and to prevent occupational illness and injury. dRi is committed to complying with the policy on occupational/ workplace health and safety. Therefore, it provided researchers with PPE (mask, gloves, eye protection etc.).

dRi developed its health protocol for the researcher's safety during the COVID-19 pandemic, and every researcher was required to follow the instructions and guidelines. The health and safety protocols followed in this project included:

- seating arrangements, both during the training and when conducting interviews were done following standard social distancing protocol;
- researchers, as well as participants, wore masks; and
- before starting every session, researchers and participants cleaned their hands with sanitiser.

2.5 Analysis of the results and developing recommendations

Data analysis began once a thorough check of interviews was complete, with all data sources triangulated during analysis. That is, data from different respondents were compared, and that the codes developed and applied to the interviews were tested independently to verify the analysis and validate the replicability of the codebook. The final coded data was verified by another senior researcher who had not coded the data to ensure corroboration.

Proposed recommendations were informed by the emerging evidence from the primary and secondary data analysis of the study, as well as including key learning from a review of literature/documents. These were conducted considering both the supply-side and demand-side findings. They were supported by bringing together views of important stakeholders at different levels of the health system and key experts. Recommendations were sharpened from feedback received on the draft report and dissemination workshop.

2.6 Limitations

1. The data collection took place from February to March 2021, which is one year after the global COVID-19 pandemic began and 11 months after the first COVID-19 case was detected in Bangladesh. Many of the respondents joined their respective positions at various points in time throughout this pandemic period. Hence, they were only able to provide information during their tenure at their current position.
2. As the duration of this study coincided with the ongoing COVID-19 pandemic in Bangladesh, certain interviews at DMCH could not be conducted. This included IDIs with two Lab technicians and resident physician medicine who were preoccupied with priority COVID-19 tasks.
3. Sub-Assistant Community Medical Officer (SACMO) post of the Bholabo union H&FWC was vacant, so no interview could be conducted.

3 Findings and Discussion: Service Provision

3.1 Prevailing service provision

The MOHFW provides services through two departments: the Directorate General of Health Services (DGHS) and Directorate General of Family Planning (DGFP) (Table 6).

Table 6: Service Provision from MOHFW

Administrative Level	Rural Areas		Urban Areas
Division			Medical College Hospital (MCH) from DGHS
District			District Hospital (DH), MCH from DGHS, Mother and Child Welfare Centre (MCWC) from DGFP, and UPHC clinic
Upazila	Upazila Health Complex (UzHC) from DGHS		
Union	Union Health and Family Welfare Centre (UH&FWC) from DGFP		
Ward	Community Clinic (CC) for 6,000 patients		
	EPI outreach sessions by DGHS	Courtyard sessions and SCs by DGFP	
	Field Workers from DGHS – HA for 6,000 population AHI and HI are supervisors	Field workers from the DGFP, and a Family Welfare Assistant for 6,000 patients. They are supervised by the Family Planning Inspector (FPI).	

Apart from the MOHFW, the Urban Primary Health Care (UPHC) project of the Ministry of Local Government, Rural Development and Cooperatives (MOLGRD&C) provides services in all city corporations and select municipalities through UPHC clinics (Table 7). NGOs provide healthcare services in both urban and rural areas through field workers, SCs and fixed facilities. Private clinic/hospital offers services, primarily in urban rather than rural areas. Druggists/pharmacists in drug shops/pharmacies are the most popular source of health care in both urban and rural areas. Unqualified allopathic practitioners (popularly known as 'quacks' or 'village doctors') are also commonly used service providers, mostly in rural areas as opposed to urban ones.

Table 7: Selected EHNS Service Providers

EHNS service	Rural Areas	Urban Areas
Family Planning	Short-acting contraceptives by FWAs in SCs, CCs, UH&FWCs, UzHCs, and drug stores/pharmacies, long-acting and permanent methods provided by UH&FWCs and UzHCs	DHs, MCHs, MCWCs, UPHC clinics, NGO clinics, and drug stores/pharmacies
ANC	CSBAs, SCs, CCs, UH&FWCs, and UzHC	DHs, MCHs, MCWCs, UPHC clinics, NGO clinics and private clinics and hospitals
Delivery and PNC	CSBAs, UH&FWCs, and UzHCs	DHs, MCHs, MCWCs, UPHC clinics, NGO clinics, and private clinics and hospitals
Immunisation	EPI outreach sessions, CCs, UH&FWCs, and UzHCs	DHs, MCHs, MCWCs, UPHC clinics, NGO clinics. and private clinics and hospitals
Diarrhoea and pneumonia management	SCs, CCs, UH&FWCs, UzHCs, drug store/pharmacies, and through village doctors	DHs, MCHs, MCWCs, UPHC clinics, NGO clinics, and private clinics and hospitals
Adolescent Health	FWAs for sanitary napkins, SCs, CCs, UH&FWCs, UzHCs, drug stores/pharmacies, and through village doctors	DHs, MCHs, MCWCs, UPHC clinics, NGO clinics, private clinics and hospital, and drug stores/pharmacies
TB	NGO workers and UzHCs	DHs, MCHs, and through NGO workers and clinics
NCDs	CCs, UH&FWCs, UzHCs, pharmacies, and through village doctors	DHs, MCHs, UPHC clinics, NGO clinics, private clinics and hospitals, and drug stores/pharmacies

3.2 Effects on Service Provision in Rural Areas

Key findings

- FWAs home visitation was suspended in the initial phase of the lockdown; this affected oral pill and male condom distribution.
- Injectables, implant and permanent methods were unavailable during the lockdown.
- ANC and PNC services affected during the lockdown as SC and UzHC outpatient services were closed; though CC and UH&FWC were open but maintaining physical distance while serving.
- Home delivery increased as access to facilities was limited.
- EPI remained non-operational during the lockdown.
- TB case detection was suspended during the lockdown, though DOTS medication continued.
- NCD services were provided mostly by village doctors and druggists with some disruptions in the beginning due to the need to maintain a physical distance while serving.
- Additional services were provided by the DGHS field workers as a member of the COVID-19 response team and laboratory technologist for COVID-19 sample collection.
- Service provisions continued to be limited even after the lockdown was lifted.

Distribution of contraceptive commodities (oral pill and male condom) to households by FWAs was stopped in the initial lockdown period that started on 26 March 2020. Interviewees gave slightly different dates for the period when distribution stopped, but all indicated mid or late March to early April[4]. All FWAs and FPI reported that, knowing the lockdown was imminent, they supplied large amounts of oral pills and male condoms to ensure there was no shortage among customers. In addition, CCs were open during the lockdown and FWAs continued to attend CCs as per their schedule, so they also supplied commodities at the clinic. FWV could not conduct SCs for 3-4 months (i.e. March to May/June 2020). As the UH&FWCs were open, many people visited the FWVs at the clinic to get contraceptives, but this was still fewer in number compared to pre-COVID-19 period. Two FWAs reported that services for injectables, implant and permanent methods became unavailable during the lockdown period. When FWAs resumed home visits, many homes refused to let them in, but they could still give contraceptive supplies by leaving contraceptives at the residence. Gradually, FWA services returned to normal, with home visits, contraceptive supplies and attending CCs and SCs. FWV's contraceptive services continued throughout the lockdown period, as they provided services from the UH&FWC, which remained open. Provision of injectables and implants also resumed gradually after the lockdown.

For **maternal, newborn and child care**, ANC, PNC and child care service provisions were limited because SCs were closed during the lockdown and UzHC outpatient services remained closed when the Red Zone was declared on 21 June for 20 days (as reported by the Resident Medical Officer (RMO) and Nurse). The CC and UH&FWC were open with MNCH services, but service provisions were affected as a result of the safe distance maintained

[4] The FPI (supervisor of the FWAs) reported that the stoppage period as 26 March to 04 April. Out of 5 interviewed FWAs, 2 informed stoppage period as 18 March to 04 April, 1 mentioned as 24 March – 08 April, 1 mentioned as 26 March to 04 April, and 1 mentioned as 2 weeks without mentioning the dates.

between patient and provider, which meant it was not possible to measure weight, BP, fundal height etc., fundamentals of ANC. During the lockdown (26 March - 30 May), a period spanning over two months, the immunisation program was non-functional, as reported by the HAs, AHI, HI and EPI technologists. After the lockdown was withdrawn, the EPI program resumed and gradually became normal. The CSBA continued to provide ANC, delivery and PNC care. One FWA, who is trained as a CSBA conducted 20 deliveries during the lockdown and reported the increase of home delivery during the lockdown as people had limited options. However, she did not inform anyone about any maternal or neonatal death during the home deliveries. The FWV also mentioned delivery conduction during the lockdown. The midwife of UzHC reported very few normal deliveries and the UzHC lacks provision of caesarean section. Quack and drug sellers continued to provide MNCH services by supplying iron, folic acid, ORS etc. As Rupganj UzHC admitted COVID-19 patients for treatment, all the admitted 22 patients fled; this was reported by the RMO, nurses and midwives. Treating COVID-19 cases affected service provisions for MNCAH in UzHC, as other service seekers did not turn up out of fear. However, as the lockdown was gradually lifted, all MNCH services returned to near-normal operation. FWAs and FPI reported continuous supply of free sanitary napkins to **adolescent** girls, even during the lockdown.

TB service provision for diagnosis was suspended, as transportation of collected sputum samples was obstructed due to lockdown. However, brac sebikas reported to follow up DOTS medications through mobile phones. As the identification of new cases was hampered, DOTS treatment also became limited. Brac sebikas reported to have very few DOTS cases for each of them. A nurse of UzHC informed that TB treatment was stopped during the initial days of the pandemic.

NCD service provisions became limited due to fear and transport difficulties (non-availability during lockdown and increased fare during restricted operations). People were unable to attend UzHC. A nurse at the Rupganj UzHC informed that diabetes treatment was discontinued during the initial days of the pandemic, so most people relied on CCs and UH&FWC for treatment. However, owing to social distance regulations, BP measurement was hampered. One CC had a malfunctioning BP machine, which was only replaced with a new one after the lockdown was lifted. Thus, quacks and drug sellers were major sources of NCD service provisions, at least during lockdown. They were also cautious to maintain distance and thus suspended measuring BP and diabetes in the early period of COVID-19, but later gradually resumed these services.

Additional services were provided by the DGHS field workers. These were included in the response team and engaged in enforcing home lockdown when COVID-19 cases were detected, or for returnee immigrants. They also enforced quarantine/isolation for the mentioned period. Sometimes, they provided the ration to needy people in home lockdown/quarantine/isolation. Similarly, laboratory technologists were assigned to collect COVID-19 samples and deliver them to designated laboratories.

3.1 Effects on Service Provision in Urban Areas

As the 300 Bed Hospital in Narayanganj was declared a dedicated facility for treating COVID-19 patients from April 2020, it stopped providing other EHNS. The Narayanganj District Hospital continued to function. However, the superintendent of the hospital informed that

services stopped for a few days in March 2020, as doctors and other service providers panicked from fear of being infected by COVID-19. They had also informed the general public not to visit the hospital unless there was an acute emergency. RMO mentioned that after treating a returnee immigrant (which was not known) 8-9 doctors, nurses and other health workers became COVID-19 positive resulting in a lockdown of the hospital and its neighbourhood. People avoided the hospital after hearing about it in the media. The DMCH continued to treat both COVID-19 and non-COVID-19 cases. However, as many service providers became COVID-19 positive, their absence due to sickness and quarantine restricted many service provisions. The laboratory technologist of the Narayanganj District Hospital informed that he was assigned for COVID-19 sample collection and thus services from the laboratory were compromised. Service provision was also affected by the need to maintain a safe distance and not touch patients. Most of the private practitioners stopped their chamber practice. Many private hospitals, clinics, diagnostic facilities stopped operating, at least during the lockdown period.

"Since it was a new disease, with a communicable nature and without any known treatment, service providers panicked. To safeguard their lives, they compromised their duties by stopping treating patients."
KII of the Private Clinic Owners' Association

NGO clinics also suspended operations initially. A paramedic at Smiling Sun Clinic reported a week-long shutdown, while a physician claimed a 1-2-month closure. Druggists/pharmacists continued to serve. A druggist of Narayanganj reportedly stopped services that required touching patients, such as measuring weight, BP, temperature, diabetes, injections etc. during the initial days. However, the druggists of Dhaka city continued all services as usual, with some precaution like wearing masks, hand gloves, sanitisation etc. An owner of a private hospital in Narayanganj continued operation of the hospital, and there was also pressure from the local administration to continue providing services. However, visiting consultants could not attend due to travel restrictions during the lockdown, thus affecting service provisions.

4 Findings and Discussion: Coverage and Utilization

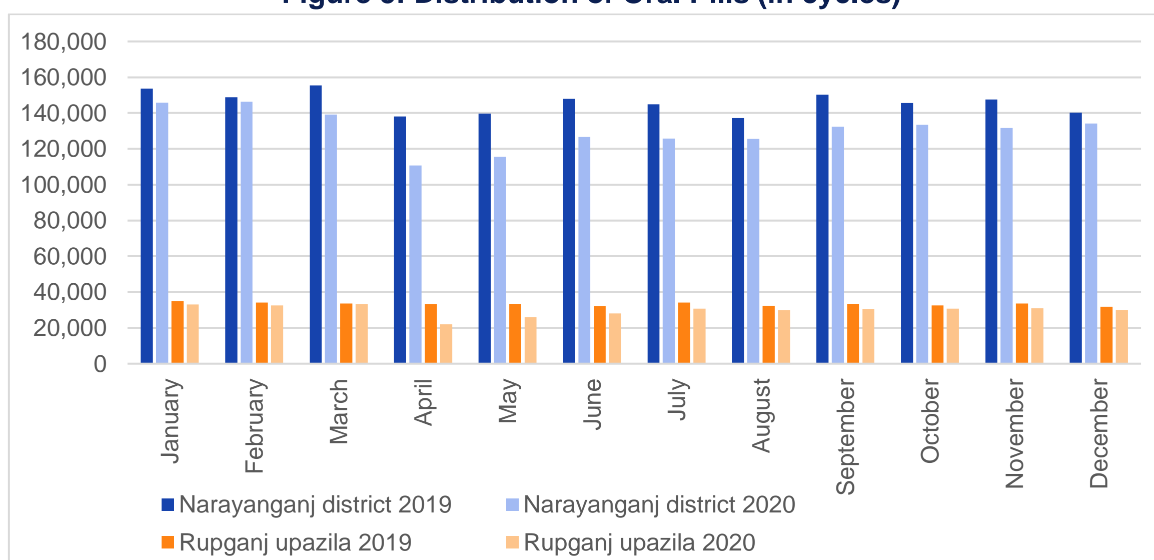
Key findings

- During lockdown (April-May) all the contraceptives oral pill, male condom, injectables, IUD, implants, ECP and both male and female sterilisations distribution/performance reduced
- Reduction in ANC, institutional delivery and PNC recorded during lockdown and pandemic year 2020
- Child immunisation, treatment for diarrhoea and pneumonia reduced during the lockdown and in 2020
- Adolescent girls' free sanitary napkin receipt remains undisturbed, but treatment-seeking reduced during lockdown
- TB case detection decreased during lockdown
- NCD: hypertension, diabetes and COPD services utilisation were constrained during lockdown
- Service utilisation and coverage started picking up after lockdown, but it never reached the pre-pandemic level of 2019 as the pandemic continued throughout 2020

4.1 Family Planning

During April-May 2020 (lockdown period) oral pill (OP) distribution dropped, both in Rupganj upazila and Narayanganj district (Figure 5). FWAs reported that their home visitation was suspended, including the distribution of oral pills. Although CCs and UH&FWC were open, people did not avail these services due to fear, so distribution was disrupted. After the lockdown was lifted, distribution gradually picked up, but still failed to reach the pre-COVID-19 pandemic level.

Figure 5: Distribution of Oral Pills (in cycles)

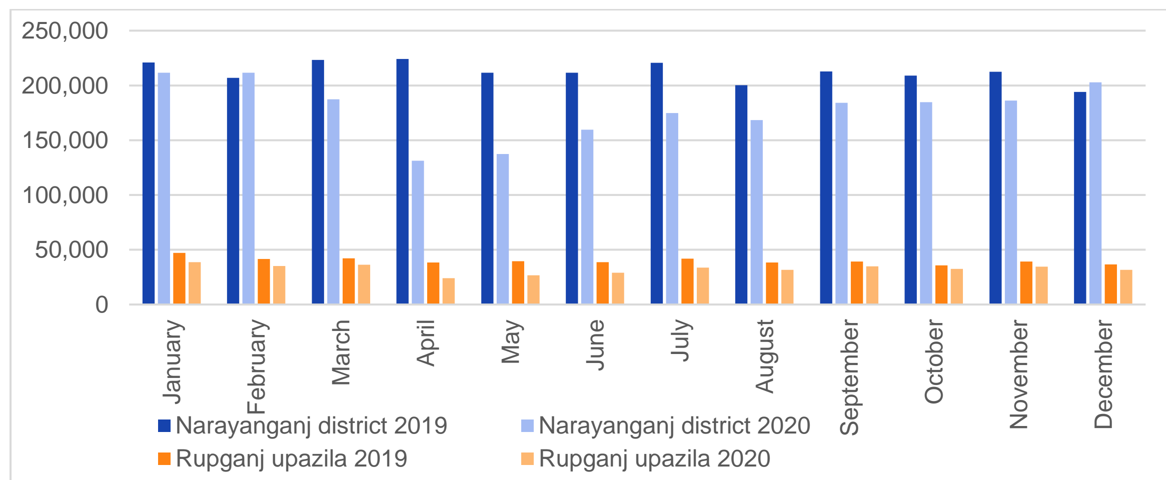


Source: MIS of DGFP

One study reported that in April immediately following the lockdown, the distribution of oral pills declined by as much as 20% in most districts, compared to February 2020 (Ainul et al., 2020). A South African study found that uptake of oral pills (OPs) increased over the past two years, 36.2% in April 2018, almost 55% in April 2019 and 71% in April 2020, and commented that increased prescription of OPs just before the lockdown could be attributed to the bulk stock of OPs issued to facility pharmacies prior to the lockdown. Also, healthcare workers may have wanted to minimise contact time with patients, which may have resulted in the increased prescription of OP (Adelekan et al., 2020). These findings are consistent with the experience in France, where oral pills dispensation increased during the first 2 weeks of lockdown compared with the expected consumption (+46.7% and +15.5%), then decreased from 31 March to 11 May 2020 (Roland et al., 2021)[2].

Male condom distribution was also affected in April 2020 - May 2020 in both Rupganj upazila and Narayanganj district, coinciding with the lockdown period (Figure 6). During this period, FWAs home visitation, the main means of distributing condoms, was suspended, as reported by the FWAs and their supervisor FPI. FGDs with women found that due to fear of contagion, no one went out to avail these services from CCs and UH&FWC, which remained open. After the lockdown, distribution remained lower in comparison to the corresponding months in 2019. One study reported a decline in condom distribution by almost 40% in over two-thirds of the country in comparison to February 2020 (Ainul et al., 2020). Similar declines in condom use were reported in Jordan (Aolymat, 2020)[3] and Australia (L.Dacosta, 2021)[4].

Figure 6: Distribution of Male Condom (in pieces)



Source: MIS of DGFP

Injectable contraceptives were provided by the FWV in the first dosage, and subsequent ones by both FWV and FWA. The reduction in injectable contraceptives was noted both in

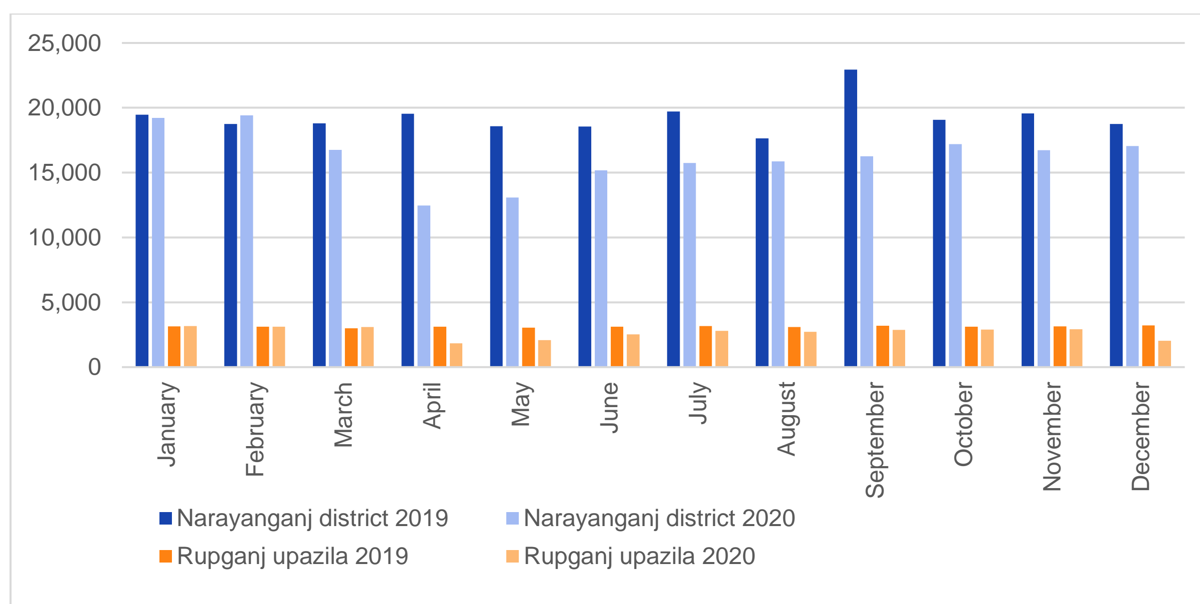
[2] The study commented that the surge in OP consumption at the beginning of lockdown was likely due to stockpiling behaviours and to the exceptional authorisation given by French authorities to pharmacists to dispense expired prescriptions (Roland et al., 2021)

[3] Male condom use was found to be 15.5% before pandemic versus 15% during the pandemic. The study commented that this significant reduction in using male condoms is likely due to the complete lockdown of the maternity and childhood centres or health centres, which in Jordan provide contraception for nominal fees. The proportion of the participants using these resources declined significantly during the era of total curfew

[4] The study revealed a general decline in condom use during a pandemic, i.e. Mean (SD)-4.38(2.50) vs. 3.55(2.68)

Narayanganj district and Rupganj upazila during the lockdown period, which was April 2020 - May 2020 (Figure 7**Error! Reference source not found.**). Though the distribution of injectable contraceptives at the upazila level improved relatively fast, the catch-up at the district level was somewhat delayed. The suspension of FWAs home visit and SCs holding together with fear of service seekers in availing service from UH&FWC contributed to the reduction of injectables uptake as reported by the FWA, FPI, FWV and service recipient women. A national study reported that, compared to February 2020, injectable contraception distribution declined by almost 40% in over two-thirds of the country (Ainul et al., 2020). A tertiary facility in Ethiopia also reported a reduction in injectables (Belay MD et al., 2020)[5]. A South African study reported about 45% reduction in monthly average uptake of injectable contraceptives in April 2020 compared to the previous two years (Adelekan et al., 2020).

Figure 7: Distribution of Injectable contraceptives (in vials)



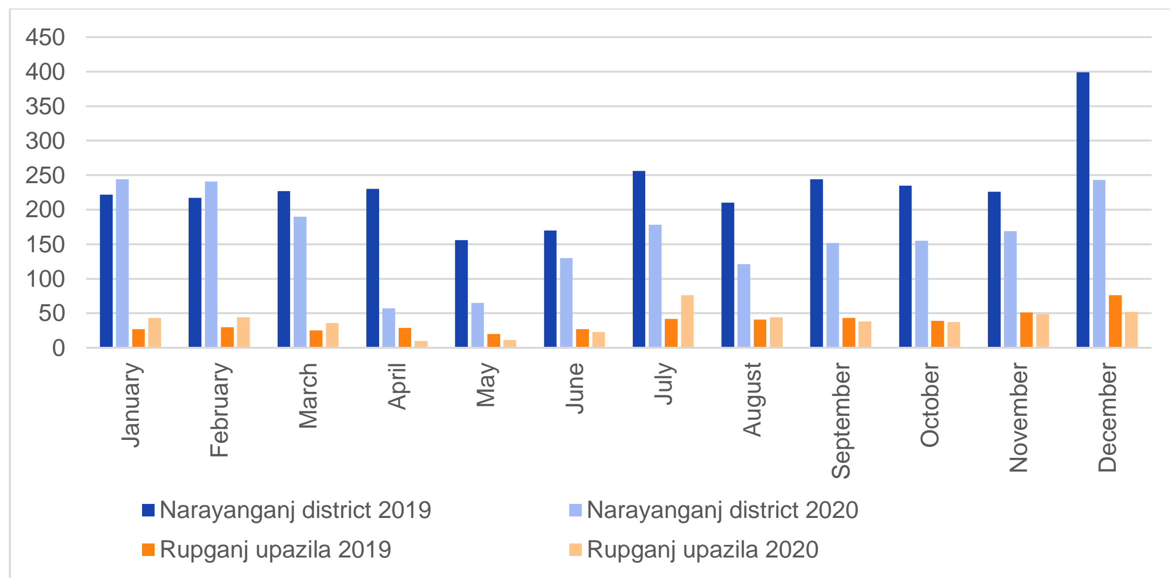
Source: MIS of DGFP

Intrauterine devices (IUDs) are inserted mostly by the FWVs, and the procedure requires close contact between the service provider and service recipient, which was a potential means of spreading communicable diseases such as COVID-19. As a result, even though the UH&FWC from where FWVs provide service remained open during the lockdown, service seekers avoided this method as mentioned during the FGD and IDI of the FWV. This is reflected in a significant drop in IUD distribution during April-May 2020 in both the Rupganj upazila and Narayanganj district (Figure 8**Error! Reference source not found.**). The period coincides with the lockdown and early phase of the pandemic when fear of infection was at its highest. A Bangladesh study found that long-acting and reversible contraceptives (LARCs), such as IUDs, were disrupted in April 2020, at the beginning of the lockdown (Ainul et al., 2020). The Ethiopian tertiary facility study reported a 63.4% reduction in IUDs (Belay MD et al., 2020).

[5] 28% reduction in injectables compared to March-May 2019 with a possibility that the decreased number of staff involved in the provision of the services may have resulted in the decline

The Jordan study found the use of IUDs at 18% before versus 16% during the pandemic (Aolymat, 2020).

Figure 8: Distribution of IUDs

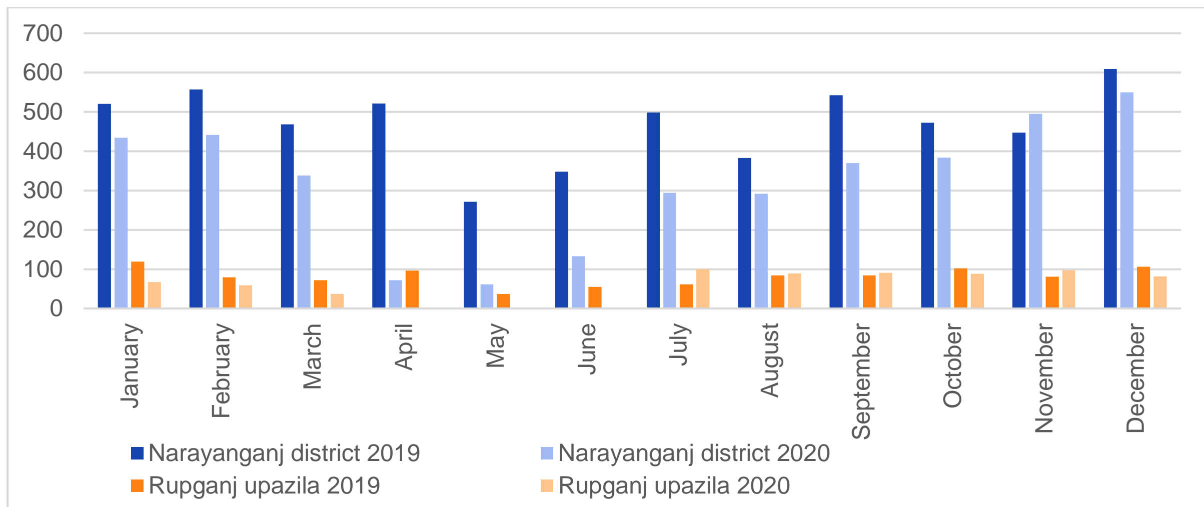


Source: MIS of DGFP

Implants are provided by a trained physician, usually at the UzHC. Besides the lockdown period from April-May 2020, the outpatient services at Rupganj UzHC remained closed when Narayanganj was declared a Red zone on 21 June 2020 for 20 days, as reported by the RMO and Nurse. As the Rupganj UzHC admitted COVID-19 patients for treatment, all the admitted 22 patients fled. This was reported by the RMO, nurses and midwives. This fear also contributed to restraining service use from the UzHC. All these resulted in nil performance in the Rupganj Upazila during April 2020 - June 2020 (Figure 9**Error! Reference source not found.**). The lockdown period also affected the performance of the district as reflected during April-May 2020. A Bangladeshi study reported that the distribution and provision of implants immediately after the lockdown was severely constrained from February to April 2020 with a decline of about 80-100% (Ainul et al., 2020). The tertiary facility in Ethiopia study also revealed a reduction in implants (Belay MD et al., 2020)[6].

[6] revealed a 40.3% reduction in implants compared to March 2019 - May 2019

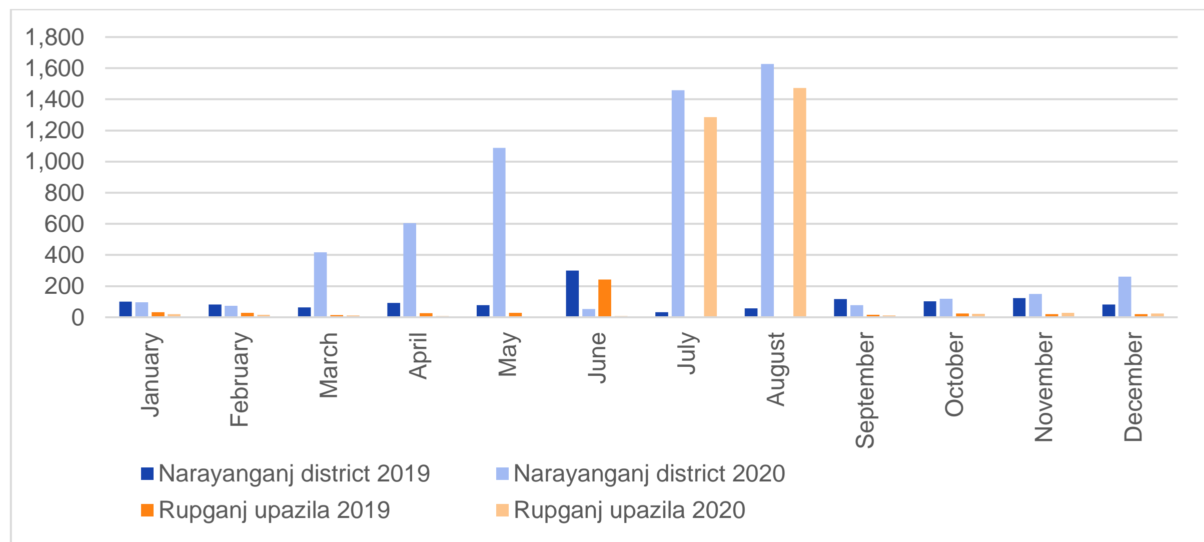
Figure 9: Distribution of Implants



Source: MIS of DGFP

Rupganj upazila demonstrated a reduction of ECP during lockdown and soon after (April 2020 - June 2020) (Figure 10**Error! Reference source not found.**). The effects at the Narayanganj district level are not clear. The French study also reported the same (Roland et al., 2021)[7].

Figure 10: Distribution of Emergency Contraceptive Pills (ECP)

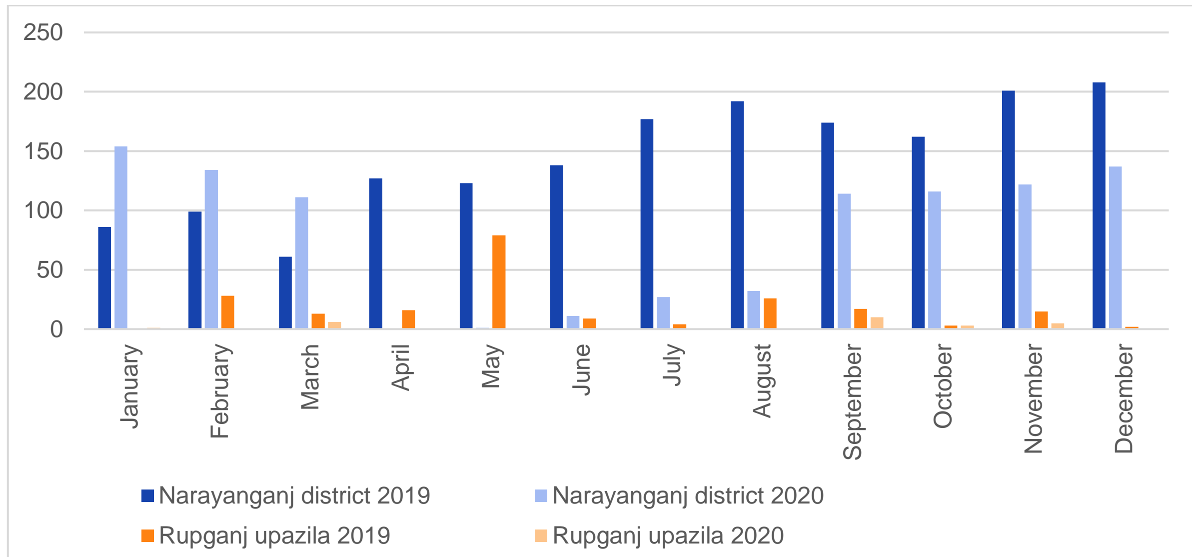


Source: MIS of DGFP

Male sterilisation (vasectomy) is performed mostly at UzHC. The limited functioning of Rupganj UzHC, as reported by RMO, nurse and midwife, affected the performance of male sterilisation. This was reflected as nil for the months of April 2020 - August 2020 (Figure 11). Narayanganj district performance was similar during the lockdown period, April 2020 - May 2020. The Bangladesh study reported that vasectomy was clearly disrupted in April, at the beginning of the lockdown (Ainul et al., 2020).

[7] compared with previous years, the use of emergency contraception fell during lockdown

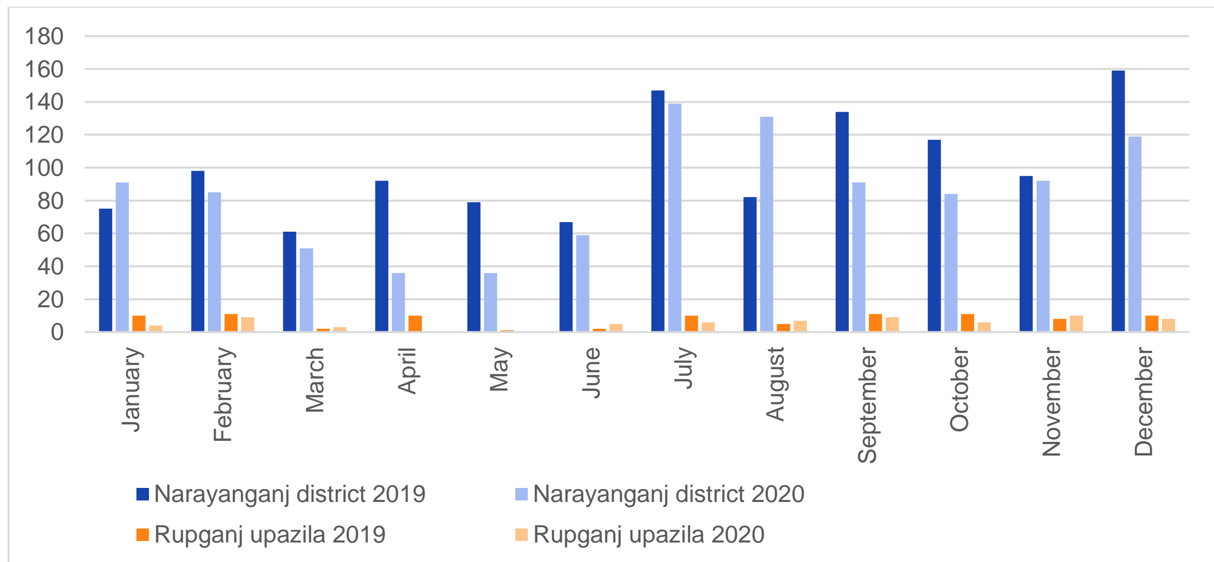
Figure 11: Performance of Male Sterilisation



Source: MIS of DGFP

Tubectomy, or female sterilisation, is typically performed at the UzHC and district Maternal and Child Welfare Centre (MCWC), either electively or following delivery, usually with caesarean section. The nil performance in Rupganj upazila during the lockdown period of April 2020 - May 2020 was a reflection of the limited functioning of UzHC, as mentioned by the IDIs of RMO, nurse, and midwife (Figure 12). The effect at the Narayanganj district level during the lockdown period was also demonstrated by the data. Other studies also revealed disruptions of tubectomy (Ainul et al., 2020)[8] and (Belay MD et al., 2020)[9].

Figure 12: Performance of Female Sterilisation



Source: MIS of DGFP

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[8] tubectomy were disrupted in April, at the beginning of lockdown in Bangladesh
[9] reduction of 85.7% in Bilateral Tubal Ligation was reported by the Ethiopian tertiary facility

4.2 Maternal and Neonatal Health

5.3.1 Antenatal Check-ups (ANC)

ANC services are provided in rural areas by the CSBA (trained FWA and female HA) in households, CHCP (female and trained) at CC, FWV at SC and UH&FWC, and UzHC. Drug stores/pharmacies provide limited services, including measuring weight, checking BP and supplies of iron, folic acid etc. In the urban areas, ANC services are provided by the district hospital, MCWC or DMCH along with private practitioners, private hospitals and NGO clinics. During the initial period of pandemic and lockdown (April-May 2020), SCs stopped operation and the CC and UH&FWC were open. Their services were constrained, however, as close contact with clients was required to measure weight, check BP, and fundal height (reported by the CSBA FWA and FWV), and UzHC operated on a limited basis (reported by the RMO, nurse, midwife), thus affecting ANC services. Similarly, in urban areas, services by the government facilities (district hospital, MCWC and DMCH) were constrained, as providers were required to maintain distance from the patients (reported by the MOs, RMO, Gynaecologist/Obstetrician consultants).

According to the findings, the majority of private practitioners and private hospitals did not operate throughout the lockdown. NGO clinics were either closed (smiling sun) or constrained to provide care. Fear of being infected and limitations with transport (non-availability during lock-down and increased fare after withdrawal of lockdown but with limited operations) stopped them from seeking ANC, as mentioned by women during the FGDs. Overall, in 2020, ANC service was reduced in comparison to 2019 by 84.3% in DMCH, 51.72% in Narayanganj district and 37.63% in Rupganj UzHC (Table 8). The number of women receiving ANC had a sudden decrease (48% in Narayanganj; 80% in Rupganj) in April 2020, at the initial stage of the pandemic and lockdown (

Table 8: Change in Total ANCs of DMCH, Narayanganj district and Rupganj upazila (2019-2020)

	DMCH		Narayanganj District		Rupganj Upazila	
	2019	2020	2019	2020	2019	2020
Total ANCs	15,521	2,437	56,235	27,155	8,083	5,042
% change in 2020	-	(-) 84.30	-	(-) 51.72	-	(-) 37.63

Sources: Health Bulletins of Rupganj Upazila Health Complex, Narayanganj Civil Surgeon's Office and DMCH for 2019 and 2020

Figure 13: ANCs of Narayanganj district and Rupganj upazila

Figure 14**Error! Reference source not found.**). In May 2020, no patient came to receive ANC services from Rupganj UzHC. With almost 71% of COVID-19 cases in Bangladesh coming from Dhaka city and Narayanganj as of 13 April 2020 (The Financial Express, 2021), the entire Narayanganj district was under strict lockdown as an epicentre of COVID-19 (Rita, 2020). These sequences of events compounded fear among pregnant women seeking ANC services in Narayanganj. For Rupganj, the scenario was not much different, as the lockdown was firmly in place during that time (The Business Standard, 2020), which contributed to extreme low attendance. The situation remained almost the same for the rest of the year, even post-lockdown.

Table 8: Change in Total ANCs of DMCH, Narayanganj district and Rupganj upazila (2019-2020)

	DMCH		Narayanganj District		Rupganj Upazila	
	2019	2020	2019	2020	2019	2020
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% change in 2020	-	(-) 84.30	-	(-) 51.72	-	(-) 37.63

Sources: Health Bulletins of Rupganj Upazila Health Complex, Narayanganj Civil Surgeon's Office and DMCH for 2019 and 2020

Figure 13: ANCs of Narayanganj district and Rupganj upazila

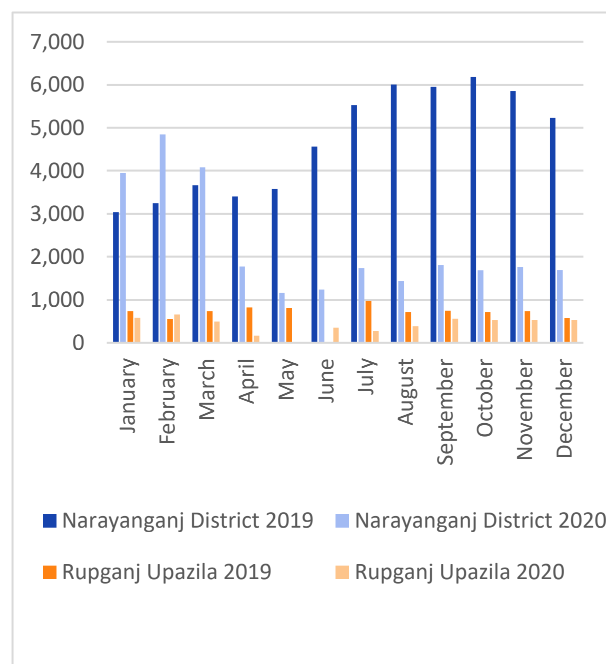
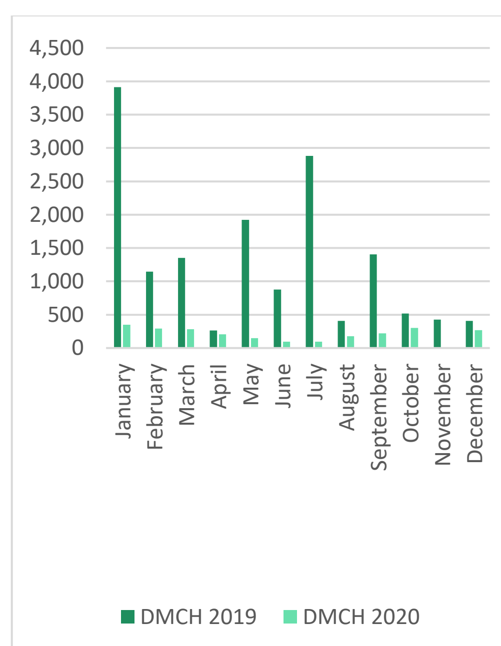


Figure 14: ANCs of DMCH



Sources: Health Bulletins of Rupganj Upazila Health Complex, Narayanganj Civil Surgeon's Office and DMCH for 2019 and 2020

A study reported that the total number of reported ANC 1-4 visits during the COVID-19 months (March to August 2020) were below the predicted levels of ANC visits, and showed a sharp decline during March 2020 and April 2020. For instance, ANC-1 decreased by 50%

(Data for Impact , 2021). Similar findings reported from India (Goyal et al., 2020)[10], Ethiopia (Tadesse, 2020)[11] and Jordan (Muhaidat et al., 2020)[12].

"Due to fear of Corona, we did not come out from our homes and did not go to health facilities for pregnancy check-ups."
FGD of mother of newborn at Pubergaon village

"Due to fear of being infected, we did not go to health facilities for check-ups."
FGD of mother of newborn at DNCC

5.3.2 Delivery

There were reductions in total institutional delivery of 50.70% in DMCH, 9.98% in Narayanganj district and 52.74% in Rupganj upazila in the pandemic year 2020 in comparison to the previous year of 2019 (**Error! Reference source not found.**Table 9). The comparative analysis on institutional delivery data for the same period in Narayanganj district reveals that the number started decreasing since April 2020 at the initial stage of lockdown.

Table 9: Change in deliveries conducted by Rupganj upazila, Narayanganj district and DMCH from 2019-2020

	DMCH		Narayanganj District		Rupganj Upazila	
	2019	2020	2019	2020	2019	2020
Total	13,041	6,428	1,741	1,393	328	155
% change in 2020	-	(-) 50.70	-	(-) 19.98	-	(-) 52.74

Sources: Health Bulletins of Rupganj Upazila Health Complex, Narayanganj Civil Surgeon's Office and DMCH for 2019 and 2020

As the 300 Bed Hospital in Narayanganj was declared as dedicated to COVID-19 from April 2020, it stopped providing services to non-COVID-19 patients. The Narayanganj District Hospital continued to function. However, the superintendent of the hospital informed that services were stopped for a few days in March 2020 as doctors and other service providers panicked from the COVID-19 outbreak. The RMO mentioned that after treating a returnee immigrant (which was unknown to them) 8-9 doctors, nurses and other health workers were found COVID-19 positive resulting in lockdown of the hospital and its neighbourhood. As this became known to people through the media, they also avoided the hospital. These events contributed to the observed decline in institutional delivery during that period, especially in the Narayanganj district (**Error! Reference source not found.Error! Reference source not fo**

[10] at a tertiary level hospital found that one-third of women had inadequate antenatal visits, with 4.42% reporting no antenatal visits and many women avoided routine check-ups during the strict lockdown for at least 3 months, from March 2020 to May 2020. The study commented that the main reason for delaying health-seeking was lockdown, lack of transportation, and fear of contracting an infection

[11] revealed that 55.5% of respondents missed or were late to start ANC services during the COVID-19 pandemic period and 17% reported that they did not attend due to the stay-at-home principle. The study inferred that the interruption of services due to COVID-19, lack of transport access, fear of contracting COVID-19 were the main reasons for the underutilisation of ANC services

[12] during the lockdown, over half (59.53%) did not receive any ANC, which was only 4% before lockdown, and 28.07% were communicating with their care provider only over the phone without actual antenatal visits.

und.). Treating COVID-19 cases affected institutional deliveries in UzHC as other service seekers avoided health care due to fear of infection. A midwife at UzHC reported very few normal deliveries. The UzHC does not have a provision for performing caesarean sections.

> *"Women are not aware of their health, and in the family, women's health is a lower priority. Hence, that they turn up less for delivery in hospital, particularly during a pandemic, is not uncommon."*
>
> *Senior Consultant, Gynaecology/Obstetrics of Narayanganj District Hospital*

The downward spiral in institutional deliveries continued till August 2020, as a 57% reduction in facility delivery was observed in both the district and upazila (from 223 in August 2019 to 96 in August 2020 in Narayanganj and from 26 in August 2019 to 11 in August 2020 in Rupganj). However, from September 2020 onwards, a gradual increase was observed which could be attributed to the lifting of the lockdown and transportation restrictions, as well as the reopening of health facilities. Overall, there was a clear downward slope in the number of facility deliveries at both the district hospital and the UzHC during the first few months of the pandemic. FGD participants from Rupganj upazila stated that of the 8 women who gave birth during the pandemic, 4 had home deliveries and 4 travelled to the hospital, with 1 normal delivery and 3 caesarean sections (1 in a private hospital and 2 in government facilities). Moreover, total deliveries conducted at the DMCH were also impacted by the COVID-19-related mobility restrictions, with a sharp decline from April 2020 (Figure 16). For instance, when compared to April 2019 data, the number of deliveries at DMCH declined by almost 80% in April 2020. Only 2 of the 7 FGD participants from DNCC who gave birth during the lockdown, the majority of whom were slum dwellers, chose institutional delivery, one in an NGO hospital and the other at an NGO birthing hut. The remaining 5 had home deliveries.

Figure 15: Total deliveries conducted in Narayanganj and Rupganj

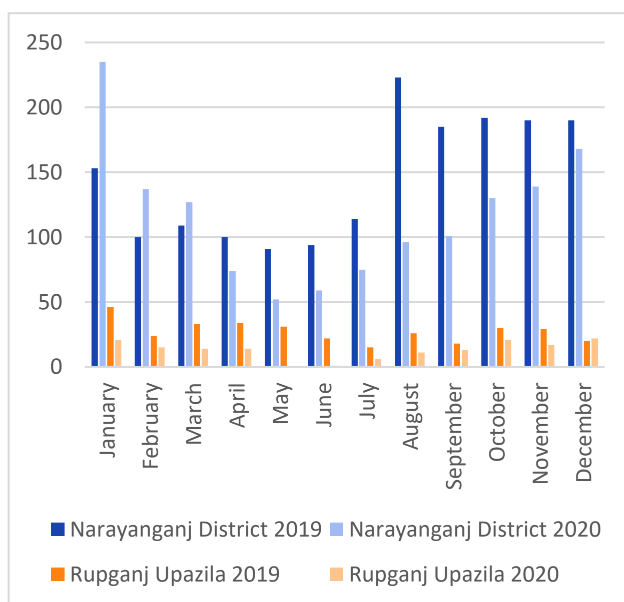
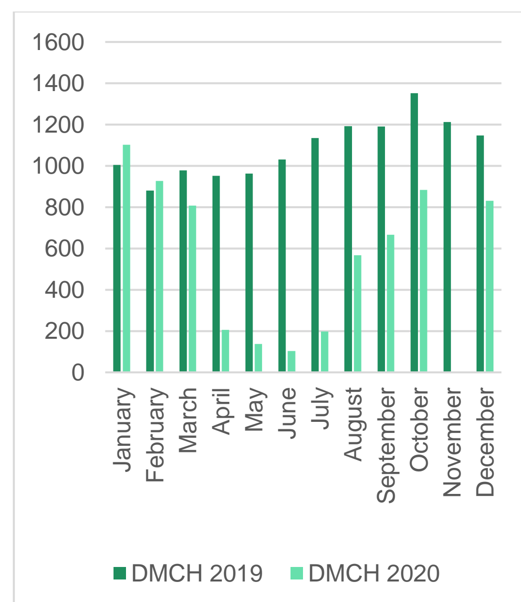


Figure 16: Total deliveries conducted in DMCH



Sources: Health Bulletins of Rupganj Upazila Health Complex, Narayanganj Civil Surgeon's Office and DMCH for 2019 and 2020

A study reported that the institutional Normal Vaginal Delivery (NVDs) services fell by 41%, 52% and 56% respectively, between January and April 2020, in UzHC, secondary hospitals and tertiary hospitals. An upward trend in the utilisation of institutional NVDs across all three facility levels was observed starting in June 2020. Utilisation, however, did not reach the corresponding 2019 levels, even by October 2020. By September 2020, normal institutional deliveries in UzHCs had increased to just over 90% compared to September 2019, while even by October 2020, deliveries in tertiary level hospitals were at only 68% of 2019 values (Wangmo et al., 2021). Another study revealed that all forms of institutional delivery - normal and caesarean section- were lower in April 2020 (15% and 20% respectively), compared to April 2019. Although the situation slightly improved post-lockdown, the trend continued, as institutional deliveries was 10% lower in June 2020 compared to 2019. Disruption in institutional delivery for both normal (42%) and caesarean section delivery (41%) occurred in the capital Dhaka due to pandemic and lockdown (Ainul et al., 2020). Studies from India (Singh et al., 2021)[13] (Goyal et al., 2020)[14] also reported reduction in institutional deliveries.

5.3.3 Postnatal Check-ups (PNC)

Postnatal check-ups (PNC) are provided by the same providers and facilities that provide ANC. In the rural areas, government providers include CSBA (trained FWA and female HA), CHCP (trained female) at CC, FWV at SC and UH&FWC and UzHC. In the urban areas, PNCs are provided by the district hospital, MCWC and DMCH from the government and private practitioner, private hospital and NGO clinics from the private sector. In general, PNC uptake was limited. According to the BDHS 2017, 52% of women and children received PNC within 2 days of delivery as opposed to 82% of women who received at least once ANC from a medically trained provider (National Institute of Population Research and Training (NIPORT) and ICF, 2019).

Compared to 2019, PNC services were reduced by 80.89% in DMCH, 15.29% in Narayanganj district and 47.06% in Rupganj upazila in 2020 (Table 10). With regard to the number of mothers receiving PNC, the analysis of Rupganj upazila shows reductions during May 2020 - July 2020, and the Narayanganj district reflects a sharp decline since May 2020, which eventually improved between August – Dec 2020 (Figure 17). Similarly, the number of PNC services carried out at the DMCH also decreased due to the pandemic restrictions during April-August 2020 (Figure 18). In particular, the 2-year comparison shows a 71% decline in the service in March 2020.

As mentioned before (in the ANC section), limited operation of facilities with restrictions on proximity with patients were supply-side reasons for low utilisation, as mentioned by the service providers. Fear of being infected and transport limitations were cited as demand-side causes of low utilisation by the community.

Table 10: Change in PNCs at DMCH, Narayanganj district, Rupganj upazila (2019-2020)

	DMCH	Narayanganj District	Rupganj Upazila

[13] public health facilities from a district in India found a 2.26% decline in the number of institutional deliveries during March-June 2020 compared to the same period of the previous year 2019

[14] 45.1% reduction in institutional deliveries during the COVID-19 period comparing with the pre-COVID-19 period was recorded in a tertiary facility

	2019	2020	2019	2020	2019	2020
Total	13,690	2,616	2,902	2,458	546	289
% change in 2020		(-) 80.89		(-) 15.29		(-) 47.06

Sources: Health Bulletins of Rupganj Upazila Health Complex, Narayanganj Civil Surgeon's Office and DMCH for 2019 and 2020

Figure 17: PNCs at Rupganj Upazila and Narayanganj district

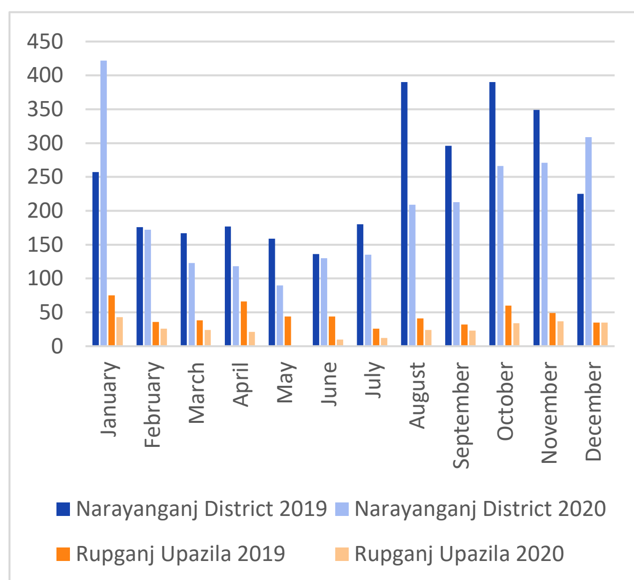
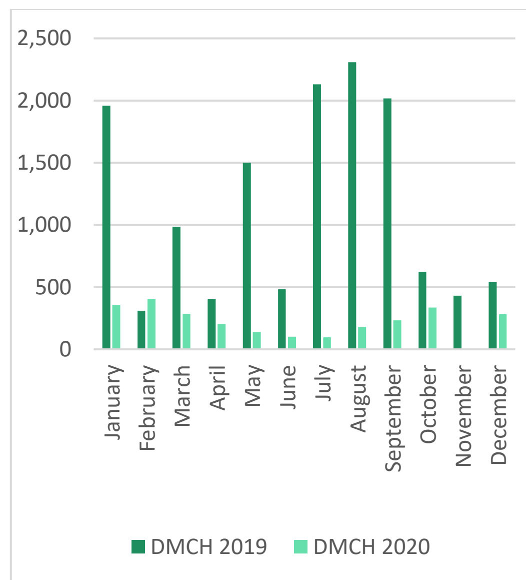


Figure 18: PNCs at DMCH



Sources: Health Bulletins of Rupganj Upazila Health Complex, Narayanganj Civil Surgeon's Office and DMCH for 2019 and 2020

"Due to fear of corona, as if we get infected and everybody will abandon, people tend to avoid seeking service."
Female ward commissioner of Bholabo union

The lady vice-chair of the Rupganj upazila parishad mentioned that due to problems with transportation, she offered her personal car for transportation for pregnancy-related health care services.

One study reported that PNC visits were 40% lower in April 2020 compared to April 2019, and even though it slightly recovered by July, it was still 25% lower compared to July 2019 (Ainul et al., 2020). Another study revealed that for April 2020, the total reported number for PNC 1 visits was 24% lower than the predicted levels. The total reported PNC 2-4 visits continued to be significantly lower than the expected levels throughout the COVID-19 months (Data for Impact , 2021).

4.3 Child Health

5.3.1 Immunisation

The third dosage of the Pentavalent vaccine (Penta-3), which protects against diphtheria, tetanus, whooping cough, hepatitis B and Haemophilus influenza type B, is often regarded as a proxy indicator for childhood immunisation. Overall, the data on Penta-3 for 2020 reflected negative changes for both the Narayanganj district (-2.92%) and Rupganj upazila (-11.91%) when compared to 2019 data (Table 11).

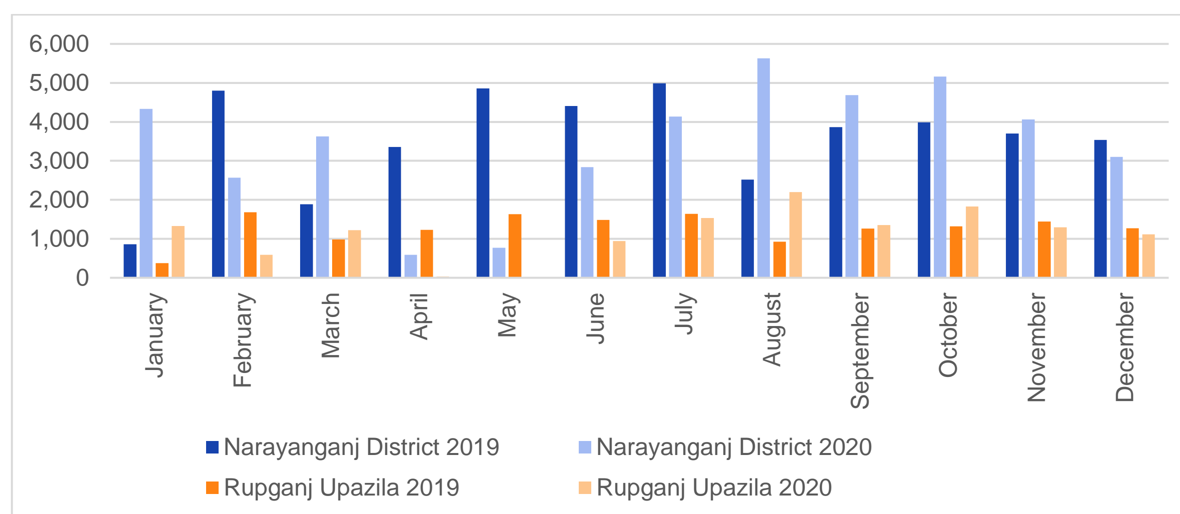
Table 11: Change in Penta-3 immunisation from 2019-2020

	Narayanganj District		Rupganj Upazila	
	2019	2020	2019	2020
Total	42,760	41,511	15,252	13,434
% change in 2020	-	(-) 2.92	-	(-) 11.91

Sources: Health Bulletins of Rupganj Upazila Health Complex and Narayanganj Civil Surgeon's Office for 2019 and 2020

The analysis of childhood immunisation (BCG, Penta: 1-3, OPV: 0-3 and MR) data in both Narayanganj district and Rupganj upazila depicts a substantial decrease at the initial stage of the pandemic (April 2020 - May 2020). For instance, the decreased rates of childhood vaccination for Penta-3 in Narayanganj district and Rupganj upazila were 82% and 97% respectively in April 2020 (Figure 19). As mentioned by the HAs, AHI, HI and EPI technologists, immunisation activities were non-functional during the lockdown period of April-May 2020. The FGD with mothers of newborn children also confirmed the same. However, the Penta-3 started increasing in June 2020 for both the Rupganj upazila and Narayanganj districts. Penta-3 immunization was higher in August, September, and October 2020 than in the same months in 2019. The same trend was also observed for other vaccines including BCG, OPV, and MR. This may be attributed to the lifting of travel restrictions in Narayanganj and across the nation (The Daily Star, 2020).

Figure 19: Utilization- Penta-3 immunisation



Sources: Health Bulletins of Rupganj Upazila Health Complex and Narayanganj Civil Surgeon's Office for 2019 and 2020

One WHO published study found that trends in EPI coverage for 2020, when compared to 2019, showed that up to March, immunisation coverage was comparable, but dropped by 46% in April 2020 when compared to April 2019; from June to October 2020, however, immunisation coverage was higher in contrast to the same period in 2019 (Wangmo et al., 2021). Another study reported that the childhood immunisation services were mostly disrupted in April and May 2020, when 20% and 25% of planned outreach immunisation sessions were cancelled respectively (Rana et al., 2021). A Data for Impact study revealed that the total number of reported BCG vaccinations in April 2020 was more than 40% below predicted levels (Data for Impact , 2021).

A decrease in immunization was also reported in Pakistan, (Chandir et al., 2021)[15], Sierra Leone, (Buonsenso et al., 2020)[16], Englandl (McDonald et al., 2020)[17] and United States (Santoli, MD et al., 2020)[18].

5.3.2 Diarrheal treatment

Diarrheal treatment declined in 2020 in both Rupganj upazila (by 16.29%) and Narayanganj district (18.15%) when compared to 2019 (Table 12).

Table 12: Change in Diarrheal treatment from 2019-2020

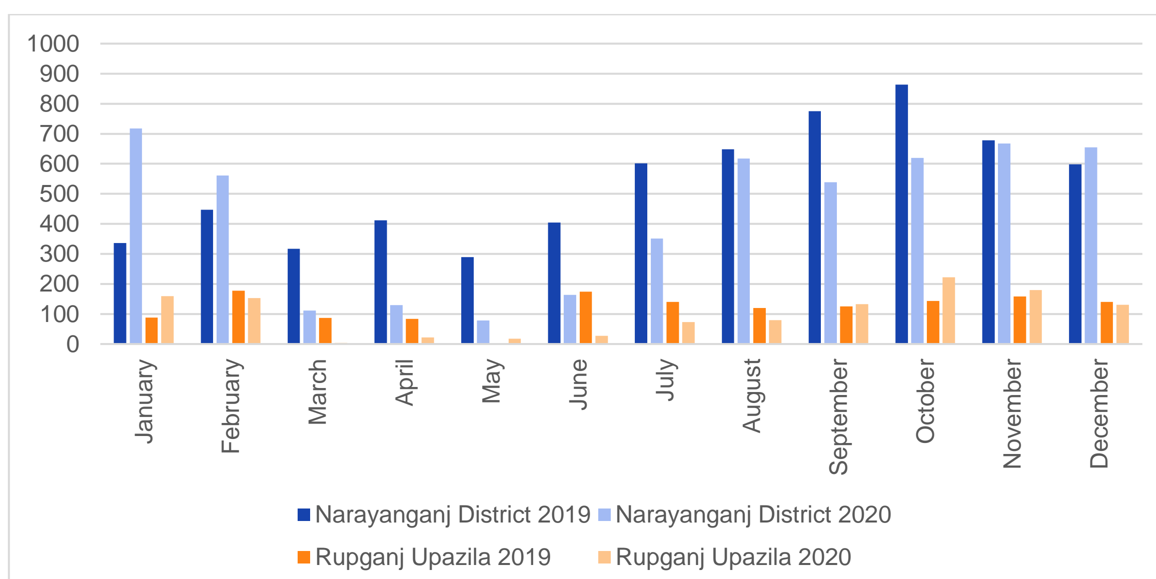
	Narayanganj District		Rupganj Upazila	
	2019	2020	2019	2020
Total	6,369	5,213	1,436	1,202
% change in 2020	-	(-) 18.15	-	(-) 16.29

Sources: DHIS2 web portal of the DGHS

Specifically, utilisation of services for diarrheal diseases showed an accentuated decline from March 2020, compared to the trend in 2019. Utilization remained low through June/July before increasing to previous year levels in July/August 2020 (Figure 20). In the case of diarrheal treatment for children at the health facilities of Rupganj upazila, the number of treatments declined by 95% and 74% in March and April 2020, respectively, as compared to the corresponding months of 2019. Reasons for this decline was similar to those noted above for other services; in particular, lockdown resulting in transport unavailability, the high cost of transport in the immediate post-lockdown period, fear of getting infected with COVID-19 from health facilities, and advice to remain at home.

[15] the mean number of daily immunisation visits decreased by 52.8% during 23 March 2020 - 9 May 2020 (lockdown period) compared to 6 months before lockdown
[16] vaccination declined between March 2019 - April 2019 and March 2020 - April 2020: BCG by 52.7%, OPV by 52.7% and Measles by 65.6%
[17] at the start of 2020 (weeks 1 to 9), MMR (Measles-mumps-rubella) vaccination was 1.0% lower compared to 2019. In weeks 10 to 12 of 2020, MMR vaccination was 7.2% lower compared to the same time frame in 2019, MMR vaccination count fall by 19.8% from February 2020, and in the first 3 weeks after introducing social distancing compared to the same time frame in the previous year, before gradually improving in mid-April
[18] decline in federally funded non-influenza and measles vaccine order and administration during 6 January 2020 - 19 April 2020, compared to the same timeframe in 2019,

Figure 20: Utilization - Diarrheal treatment



Sources: DHIS2 web portal of the DGHS

"We used medicines at home or bought from the pharmacy. Due to the prevalence of Corona, we all were frightened and were extra careful about our children so that they don't fall sick."
FGD with mothers of children aged less than 5 years, Bholabo union

One mother during an FGD in Pubergaon village and another in Narayanganj confirmed that they purchased oral saline from the pharmacy when their child experienced diarrhoea. Mothers also stated that their children did not have diarrhoea during the early stages of the pandemic, saving them the trouble of seeking medical attention.

"At the beginning of the pandemic, people tended not to step out of their residences due to fear. They didn't even visit my shop."
Druggist, Bholabo union

The Narayanganj District Hospital's paediatrics consultant stated that parents did not seek care in the hospital due to fear of COVID-19 infection, even when their children had diarrhoea. The paediatric outpatient medical officer at DMCH mentioned that the number of diarrhoea patients was less during the lockdown period.

5.3.3 Pneumonia treatment

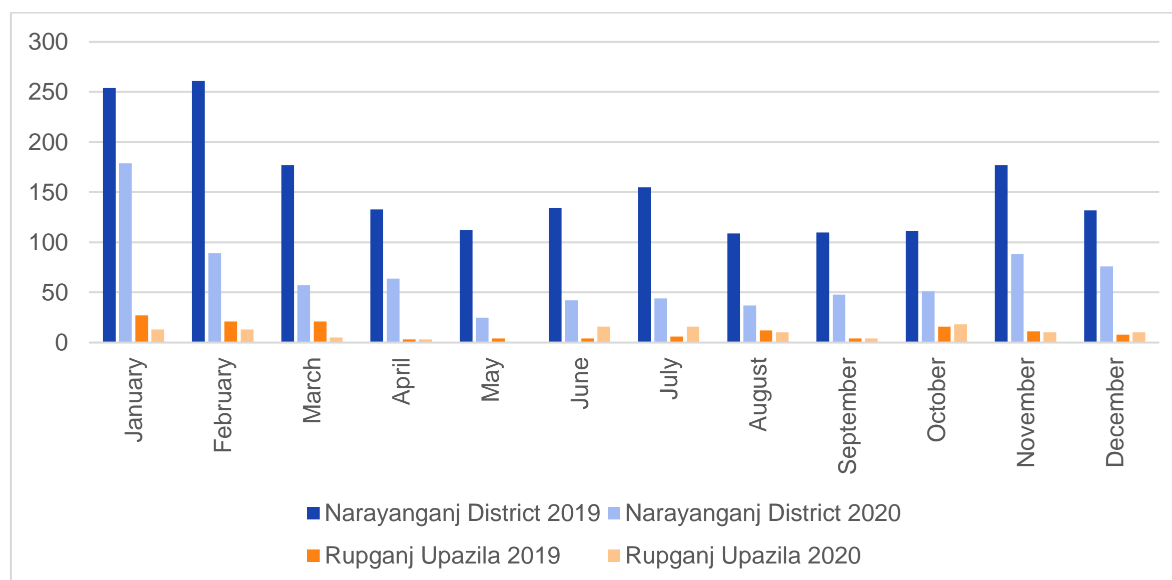
In 2020, there was a sharp decline (57.10%) in children seeking pneumonia treatment in Narayanganj district and a comparatively lower decline (13.86%) in Rupganj upazila compared to 2019 (Table 13). When comparing month to month between the 2020 and 2019, pneumonia treatment seekers in the district were found to be lower in all months, but the upazila trend differed with some variations in the months of post lockdown period. (Figure 21).

Table 13: Pneumonia treatment by Narayanganj district and Rupganj upazila

	Narayanganj District		Rupganj Upazila	
	2019	**2020**	**2019**	**2020**
Total	1865	800	137	118
% change in 2020	-	(-) 57.10	-	(-) 13.86

Sources: DHIS2 web portal of the DGHS

Figure 21: Utilization- Pneumonia treatment



Sources: DHIS2 web portal of the DGHS

The managing director and a physician of the 10-bed private hospital at Rupganj informed that he treated all types of patients including pneumonia in children. A mother of an infant informed during an FGD that her child caught pneumonia twice during the lockdown, and she went to the Institute of Child and Mother Health at Dhaka, where she received services. Another respondent of the FGD in DNCC also informed that she availed treatment from Dhaka Children Hospital for her child's pneumonia. Children of the other mothers (a total 37 mothers) did not experience pneumonia during the lockdown period. Lower treatment seeking for acute respiratory illness was also reported from other countries - Italy (Cella et al., 2020)[19], . (Atti et

[19] 222 patients attended for acute respiratory disease in March 2020 compared to 2,069 patients in March 2019. Additionally, 142 children were hospitalised for acute respiratory disease in March 2019 compared to 88 children in March 2020

al., 2020)[20],. British Columbia, Canada (Goldman et al., 2020)[21], Brazil, (Nascimento et al., 2020)[22] and United States. (Hartnett et al., 2020)[23].

4.4 Adolescent Health

Adolescents, particularly girls, received counselling and treatment services from field workers and different facilities in the public sector. In rural areas, FWA supplied free sanitary napkins and services from SC, CC, UH&FWC and UzHC. In urban areas, services are available at the district hospital, MCWC, DMCH. Private practitioners, private hospitals, drug shops/pharmacies and NGO clinics serve adolescents in both rural and urban areas.

FWAs reported that the free sanitary napkin distribution continued, even during the lockdown; this was confirmed by their supervisor FPI.

The number of adolescent girls who received treatment for reproductive tract infection (RTI)/sexually transmitted infection (STI) increased by 12.39% in Narayanganj district and reduced by 3.6% in Rupganj upazila in 2020 when compared to 2019 (Table 14). Marked reductions during April 2020 - May 2020 (lockdown period) were noticed for both the upazila and district (Figure 22**Error! Reference source not found.**).

Table 14: Adolescent girls receiving treatment for RTI/STI

	Narayanganj District		Rupganj Upazila	
	2019	**2020**	**2019**	**2020**
Total	7,337	8,235	1,589	1m531
% change in 2020	-	12.39	-	(-) 3.6

Source: MIS of DGFP

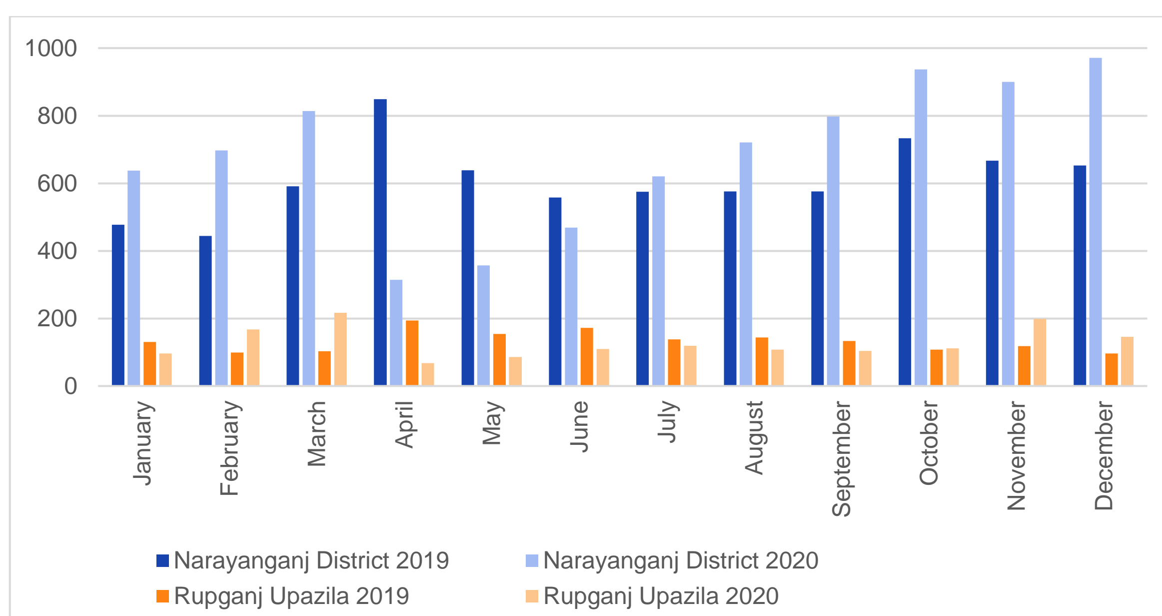
[20] for respiratory tract infections, the mean daily urgent hospitalisation rate fall from 8.8 patients in 1 January 2020 - 19 February 2020 (before the first COVID-19 Italian case) to 5.1 patients in 11 March 2020 - 20 April 2020 (during lockdown)

[21] a 56% reduction in the number of emergency visits for respiratory infections in the peak pandemic phase (17 March 2020 - 30 April 2020) compared to the same period of the previous year

[22] a 36.3% reduction in respiratory disease hospitalisation of children under age 5 in the social isolation period (April 2020 - June 2020) compared to no isolation period (January 2015-March 2020) was reported

[23] Comparing emergency department visits during four weeks early in the pandemic 29 March 2020 - 25 April 2020 (early pandemic period) to that during 31 March 2019 - 27 April 2019 (the comparison period) among children aged ≤10 years, the largest declines were in visits for influenza (97% decrease) compared to the previous year; an 84% decline was observed for upper respiratory conditions

Figure 22: Adolescent girls receiving treatment for RTI/STI



Source: MIS of DGFP

A CHCP of a CC in Bholabo union informed that adolescents seeking healthcare reduced by 50% during the lockdown due to fear of contagion. An FWV informed that SC operation was suspended for 3-4 months in the initial period of the pandemic. She also informed that though UH&FWC continued to operate, adolescents who used to come for advice and treatment during the pre-pandemic period turned up in reduced numbers in the early phase of COVID-19. During an FGD, FWVs also echoed that there were very few service seekers during the lockdown. The drug sellers of Bholabo union and Narayanganj mentioned that they used to serve adolescent girls by selling sanitary napkins and advising/treating menstrual problems, but that their service seeking significantly reduced during the initial days of COVID-19. The drug seller at the DNCC informed that the selling rate of sanitary napkins remained the same (4-5 per day), even during the lockdown. The Junior Consultant, Gynaecologist/Obstetrician at Rupganj UzHC also reported a minimum turnout of adolescent girls during the lockdown.

"During the pre-COVID-19 era, outpatient service attendance was 800-900 daily, which reduced to 100-120 daily during the lockdown, and that affected attendance of all types of patients."

RMO of Narayanganj District Hospital

The gynaecologist consultant at the DMCH outpatient clinic reported a decrease in patients from 250-300 per day during the pre-pandemic period to 30-40 per day during the lockdown period; including a decrease in the number of adolescent girls. A private practitioner of Narayanganj experienced the same, with a drop from 25-30 patients per day during the pre-pandemic period to 4-5 patients per day when the lockdown and all restrictions were withdrawn. Study from India also recorded lower services (Kumar et al., 2020)[24].

[24]adolescent girls were deprived of public health services along with free sanitary napkins, health education, and immunisation activities due to the COVID-19 pandemic

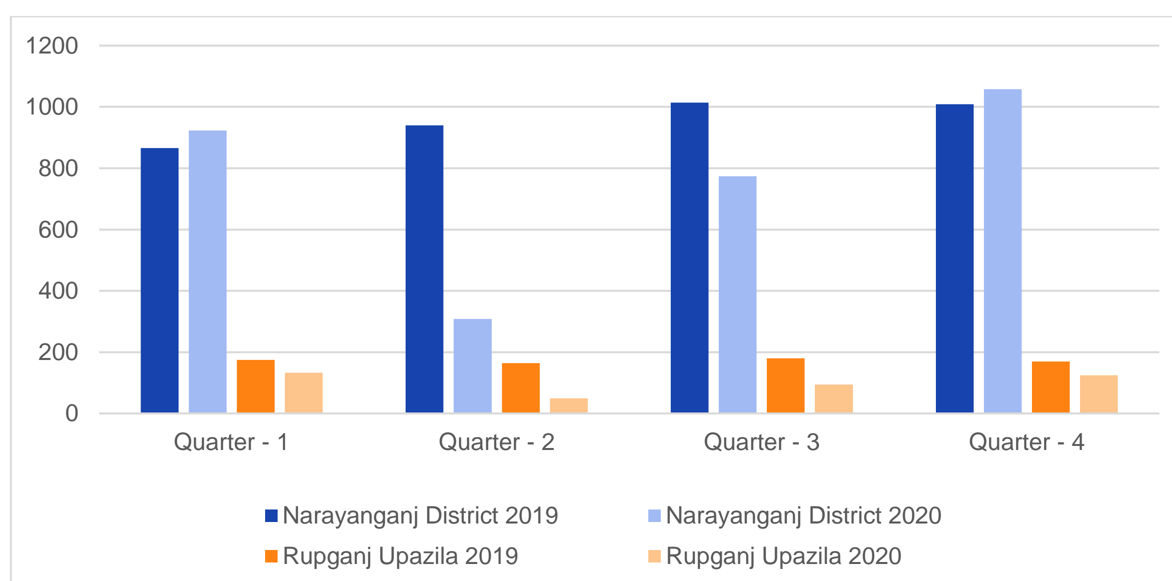
4.5 Tuberculosis

Tuberculosis (TB) healthcare includes case detection and treatment. The presence of a persistent cough is considered suspect, and the person is sent for an examination of their sputum. An X-ray is also carried out. Detected cases are supplied with medicines (DOTS-Directly Observed Treatment Short Course) free for six months, which need to be collected at determined intervals. Brac, an NGO, provides TB services through its workers, called Sebikas, who send cough samples of suspected patients for tests. If TB is detected, then they ensure daily intake of DOTS medicines for six months.

The lockdown period (April 2020 - May 2020) corresponded with Quarter-2 of 2020 and recorded a substantial decrease in TB case detection, both in Rupganj upazila and Narayanganj District (Table 15). Brac sebikas, during FGDs both at Rupganj and DNCC, informed that collection of cough samples was suspended during lockdown, mainly due to transportation difficulties, but also due to fear of COVID-19, which is not only a respiratory disease, but also a communicable disease. Rupganj sebikas, however, continued to follow up with their allocated TB patients for daily DOTS medicine intake, as they belonged to the same village. However, sebikas at DNCC did not visit allocated TB patients' houses, and patients collected DOTS medicines from the brac TB centre. Some sebikas followed up on their patient's daily DOTS medicine intake using mobile phones. Smiling Sun Clinic used to refer suspected TB cases to brac TB centre for diagnosis, but as it was closed during the early period of lockdown, it did not provide the same service.

Both the CHCPs spoke about services provided by the brac sebikas for cough sample collection, either being referred by them, or collected by Sebikas from the CCs. However, this service was reportedly suspended during the lockdown period. Also, the FWVs during FGD reported their referral to brac sebikas for sputum testing in suspected TB cases. The RMO of Rupganj UzHC mentioned that TB services were suspended during the lockdown period. The RMO of Narayanganj District Hospital claimed that its outpatient services were curtailed during the lockdown, impacting TB case detection. Most of the TB patient FGD participants got their TB detected after lockdown and hence did not face difficulties for case detection and continuation of DOTS treatment, which were through brac sebikas and another NGO, the Salvation Army, in DNCC.

Figure 23: Pulmonary TB bacteriologically confirmed



Source: MIS of National Tuberculosis Program

Table 15: Changes in Pulmonary TB bacteriologically confirm in Narayanganj district and Rupganj upazila from 2019 to 2020

	Narayanganj District		Rupganj Upazila	
	2019	**2020**	**2019**	**2020**
Total	3,829	3,063	688	401
% change in 2020	-	(-) 20.00	-	(-) 41.71

Source: MIS of National Tuberculosis Program

TB service disruptions are also reported in other countries including India (Jain et al., 2020), (Bhargava & Shewade, 2020), (Khan et al., 2021), China (Wu et al., 2020) and South Korea (Kwak et al., 2020).[25].

4.6 Non-Communicable Diseases (NCDs)

5.3.1 Hypertension

The female hypertensive patients of Pubergaon village informed that their usual place for service is the drug store, and they did not check their blood pressure (BP) regularly, nor take medicine regularly. They did not go to the CC for measuring BP, as the CC did not have the machine. They only sought care when they felt unwell. During the initial days of the pandemic and lockdown period, most of them did not require healthcare, as their health condition was relatively good. Also, the drug seller discouraged them from seeking care during that period. However, when they fell ill, they resorted to old prescriptions and purchased medicine from the drug shop accordingly. The female hypertensive patients of Bholabo union, however,

[25]. In the epicentre of COVID-19 in South Korea (Daegu and Gyeongbuk provinces) TB notification decreased by 23% and in other provinces, patterns were similar. TB notification decreased by 25% after COVID-19 began

regularly checked their BP in various intervals: weekly, fortnightly and monthly (most). They checked their BP at a drug shop or UH&FWC during the lockdown. They continued their medications regularly, as the drug shops remained open. However, they could not check their BP as FWV (in UH&FWC) and drug sellers refused, as it would require close contact between them and increase the risk of exposure.

Out of 8 participants in the FGD with male hypertensive patients in Rupganj, only 2 checked their BP once in a month, and the rest only had it checked when they felt unwell, even though they had been taking medication for 2-3 years. The usual place to check one's BP is the neighbourhood drug shop or UzHC, however one person reported having his own machine so he could check his BP at home.

"During lockdown, due to fear of infection, we didn't check our BP. Also, the pharmacy and hospital did not want to come close to the patients for a BP check. As the pharmacies were open, we used to get medicines from there."
Male hypertensive patients of Rupganj

One hypertensive patient became seriously ill during the lockdown and was unable check to his BP anywhere. He then took previously prescribed medicine and recovered. Two of the 6 male hypertensive patients who took part in the Narayanganj FGD were diagnosed with hypertension by doctors when they went in for other issues, while the remaining 4 were diagnosed by druggists at pharmacies. Though 4 of these patients continued their regular medications and check-ups during the lockdown as the pharmacies remained open, 2 of them did not owing to financial incapacity and negligence. Male hypertensive patients of DNCC (slum dwellers) informed that though they know their hypertension condition, they did not check their BP nor take medication regularly due to poor financial conditions. However, when they felt symptoms of hypertension, they would check their BP in the neighbourhood pharmacy and then take medication. Few also mentioned occasionally availing of services from government hospitals. During the lockdown, as the pharmacies within the slum remained open, they did not experience any problems with getting services.

Both the CHCPs and FWVs, during IDIs and FGD, informed that they only checked BP and provided advice accordingly. However, patients for hypertensive care hardly visited them. RMOs of Rupganj UzHC and Narayanganj District Hospital and outpatient MO of DMCH informed that though their respective hospitals provided care to hypertensive patients, it was disrupted during the lockdown period. Private practitioners and hospitals in Rupganj, Narayanganj and DNCC continued their services, both checking BP and providing medications, even during the lockdown. Patient turnover was minimum, though. According to the private practitioner of Narayanganj, only emergency condition patients sought care during the lockdown. Drug sellers/pharmacists of Bholabo and Narayanganj informed that they stopped checking BP in the initial period of the pandemic; Rupganj pharmacist mentioned his willingness to serve, and DNCC pharmacist continued BP checks as before, even during the lockdown. All of them reported continued selling anti-hypertensive medications.

5.3.2 Diabetes

Almost half (3) of the female diabetes patients of Pubergaon would check their diabetes levels and take medication, either from Dhaka or Narshingdi diabetes hospitals. Due to financial

constraints, one patient was unable to seek health care. During the lockdown period as they could not avail services from Dhaka or Narshingdi due to travel restrictions and unavailability of transport, they relied on local pharmacies for these services. As the lockdown was withdrawn, they resumed their usual services from Dhaka and Narshingdi. Most (5) of the female diabetes patients of Bholabo also would also seek treatment at either the Narayanganj or Narshingdi diabetes hospitals. The remaining patients consulted local doctors, every 2-3 months. During the lockdown, as access to diabetes hospitals was not possible, they failed to get services for 3-4 months. Two patients continued seeking care from local pharmacies. Most of the male diabetes patients of Rupganj reportedly did not check their diabetes regularly, and they irregularly consulted doctors at Dhaka or Narshingdi.

Pharmacies are a popular choice for checking blood sugar levels. During the lockdown, diabetic patients sought care from the local pharmacies, as they remained open. However, one patient refused to be tested since the same equipment was being used for several patients, and he was afraid of contracting COVID-19. Male diabetes patients of Narayanganj used to receive regular services from the Narayanganj diabetes hospital. After the lockdown was declared, they stocked medicine at home. Some bought testing kits to check sugar levels at home, while others got check-ups at local pharmacies. Male DNCC diabetes patients stated that they took regular medication; nevertheless, half noted regular check-ups from the local pharmacy, while the other half avoided regular check-ups. As the pharmacies remained open during the lockdown, they did not face any difficulty. One patient would typically consult at the diabetes hospital when he felt unwell, but this was not possible during the lockdown.

CHCPs informed about diabetes check-up and advisory services, but patients reduced significantly during the lockdown. FWV informed about the non-availability diabetes service at UH&FWC. RMO of Rupganj UzHC informed about the suspension of diabetes care during the lockdown. RMO of Narayanganj District Hospital reported diabetic care availing after withdrawing of lockdown. An outpatient MO of DMCH mentioned about reduction of service seekers during the lockdown. A private hospital in DNCC also informed that people availed of diabetes care after the lockdown. A physician based at Smiling Sun Clinic reported that diabetes patients usually did not attend this facility, while UPHC clinic informed that it could diagnose and check diabetes but did not provide treatment. Private practitioners and hospitals in Narayanganj mentioned the reduction of patients, which included diabetes during lockdown when emergency cases only sought care. A private hospital in Rupganj reported continuation of diabetes checks and care, even during the lockdown. A drug seller in Pubergaon said that he did not check diabetes, but only provided medicine following prescription. A drug seller of Narayanganj mentioned the suspension of diabetes check-ups and insulin push services in the initial phase of COVID-19, however resumed both services soon and continued, even during the lockdown. The village doctor of Pubergaon village mentioned that patients for diabetes check-ups stopped attending him as they needed close contact. However, the village doctor at Bholabo informed that he continued the service, but suffered a shortage of supplies, which was solved as the lockdown withdrew.

Diabetes service disruptions are reported in other countries also such as India (Olickal et al., 2020)[26], (Lui et al., 2020)[27], (Khader et al., 2020)[28] and South and Central America (Barone et al., 2020)[29].

5.3.3 Chronic Obstructive Pulmonary Diseases (COPD)

Rural areas

CHCPs informed that they used to treat COPD in the CCs. During COVID-19, they continued with advice for the COVID-19 test. However, as patient flow reduced, so also did the number of COPD patients, who were particularly tense about being infected. At the beginning of the lockdown, many refused to go for tests out of fear.

"Give us medicines. We don't have any problems with corona."
COPD patients seeking care at CC when advised for COVID-19 test

FWV provided medicine to COPD patients. COPD patients took services from the hospital, even during lockdown, but in far less number. The private hospital of Rupganj reported continuing service for COPD during the lockdown and thereafter. However, as the medical consultant could not attend during the lockdown, specialist service was not available. A drug seller of Rupganj informed that more medicines for COPD were sold during the beginning of the pandemic than during normal times. Both the village doctors interviewed informed continuity of COPD management services during the lockdown.

Female COPD patients in Pubergaon during FGD reported that they were taking treatment, though not regularly. Some of them consulted doctors at Dhaka and Narshingdi, and some took services from CCs, but also mentioned the irregular supply of medicine. During the lockdown, they continued medication, refrained from availing services, and none of them faced any serious complications either. Female COPD patients in Bholabo also reported that they were on medication as per doctors' advice and used to get medicines from the pharmacy and from UH&FWC. However, during lockdown, they continued their medication, remained at home and again continued consultation with doctors as lockdown withdrew. Male COPD patients in Rupganj obtained services from village doctors, pharmacy and UzHC. However,

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[26] A study of persons with diabetes and registered in a government tertiary care centre reported of one fourth (24%) met any physician for diabetes care at least once during lockdown; two-thirds (65%) availed of medications from private medical shops; only a few (5%) were aware of the telemedicine service at the diabetes clinic, and three utilised telemedicine services. Before lockdown though, participants were on regular care at the centre. But during lockdown, among those who approached a physician, the majority chose private clinics

[27] hospitalisations were reduced for severe hyperglycaemia and hypoglycaemia: 16.5 per day (25 January 2020 – 24 April 2020) compared to 22.5 per day (25 January 2019 – 24 April 2019)

[28] An online questionnaire survey of diabetics mainly from southern India found that 87.28% of participants reported a reduction in the frequency of clinical visits; 87.81% reported that they didn't have access to healthcare service; 89.47% of participants experienced disruption in therapy; and 26.35% did not buy due to unavailability of medicines, along with 40.66% who did not buy medicines due to financial constrain

[29] An online survey with representatives of 40 diabetes organisations in the South and Central America (SACA) region (18 countries) reported that only 37% responded that a policy was put into place to protect individuals with diabetes, i.e. either delivering their medicines and supplies at home (16%), or providing them at once enough for 2-3 months (21%). The following countries reported shortage or lack of medicines and medical supplies: Argentina, Ecuador-inland, Ecuador-coast, Guatemala, Nicaragua, and Uruguay. Countries that reported difficulties to access health services were: Argentina, Bolivia, Brazil, Chile, all three Ecuador (capital, coast and inland), Nicaragua, Paraguay, Peru, Puerto Rico, Uruguay, and Venezuela.

during the initial phase of pandemic and lockdown, they refrained from seeking services from UzHC and continued services from pharmacies and village doctors. One was admitted at UzHC and had month-long treatment but left for home as the pandemic started and now (during data collection) again got admitted.

Urban areas

Male COPD patients in Narayanganj reported during FGD that they used to be on treatment as per doctors' advice, and some even were admitted to the hospital. During the lockdown, most continued medication buying from the pharmacy, but 1-2 also mentioned that they could not continue medication due to financial constraints, as their income was compromised. One continued doctor consultation, and another was admitted to a Dhaka hospital.

> *"As I lost my livelihood due to lockdown at the beginning of corona, I failed to buy the required medicines, though there is a pharmacy next door. I had to tolerate the difficulty".*
> *Male COPD patient of Narayanganj*

Male FGD COPD patients of DNCC received treatment from the tertiary level facilities, Chest Hospital and Medical University Hospital. During the lockdown and soon after, they continued medications as per their old prescriptions. As the situation normalised to some extent, they also availed of services from the abovementioned tertiary facilities.

RMOs in Narayanganj District Hospital provided COPD care, but patient flow reduced at the beginning of lockdown and pandemic. DMCH respondents also reported the same. A private practitioner in Narayanganj reported treating COPD patients even during the lockdown. Another private practitioner of Narayanganj mentioned about reduction of patient flow including COPD, particularly during the lockdown. Private hospital at DNCC informed of treating COPD patients during the lockdown. Smiling Sun Clinic informed that COPD patients usually did not turn up there, but UPHC clinic informed about serving COPD patients. A druggist at DNCC also reported continuing to serve COPD patients, even during the lockdown.

5 Findings and Discussion: Continuum of Care

Key Findings

- The service recipients indicated a disruption in the continuum of care from the end of March to the end of May 2020, owing to service shutdowns, challenges in reaching the service provider and service providers adopting non-contact practices to maintain preventive principles of COVID-19.
  - Continuity of contraceptive services was severely disrupted. Domiciliary visits did not take place during the lockdown period. Many users chose not to visit UH&FWCs and CCs to get their contraceptives. Dosages of injectables and insertion of IUD and implants were not possible in most cases and the users resorted to oral pills. Some users experienced side effects from these and discontinued.
  - The number of pregnant women, mothers, and children seeking services had declined. During the lockdown, both rural and urban health facilities experienced a decrease in the number of patients, which took time to recover after the lockdown was lifted.
  - Children's immunization was not being administered in rural areas during the lockdown. Once the program resumed after the lockdown was withdrawn, there was a rush of children catching up on immunisations that had been missed. When the service had stopped, the providers communicated with the mothers and caregivers of the children to assure them that delayed immunisation would not adversely affect the health of their children.
  - Screening for TB was disrupted, more so in the rural areas where sputum testing had stopped for almost the full duration of the lockdown. However, previously identified patients continued to get their medicines from the providers.
  - Patients would not visit providers for their pre-existing NCDs unless the condition deteriorated to the extent that it required immediate medical attention. In most cases, the patients followed the prescriptions from pre-lockdown physician visits and bought their medicines from local pharmacies.
- The service providers mentioned that they were unable to maintain continuity of service owing to fear of COVID-19 by both service recipients and providers, lockdown and transport ban/restrictions. The providers who had been involved with COVID-19 management (doctors, nurses being engaged with treatment, technicians being engaged for COVID-19 sample collection etc.) were faced with human resource and logistics shortages which constrained their ability to provide regular services. Many providers themselves being infected by COVID-19 and consequently being unable to provide services for the duration of their ailments and required quarantine also contributed to the human resource shortages.
- Local pharmacies continued to provide their services throughout the lockdown period, although they had fewer customers than usual.
- The situation gradually improved between June and August as the service seekers were able to access medications, visit doctors and go for routine check-ups. However, progress was modest at first as fear persisted among the service seekers into this phase. In the existing phase, providers can maintain service continuity similar to the pre-COVID-19 timeframe.

5.1 Family Planning

In Narayanganj, a mother of an infant and who is currently pregnant, reported taking injections before the lockdown. During the lockdown, she was unable to take injections and refused to take oral pills due to prior unpleasant experience so her husband resorted to using condoms. She believes she became pregnant as a result of this.

Female FGD participants in Pubergaon village reported their husbands worked outside the country and they did not use any method. Other women in the same village shared that FWA distributed extra volumes of pills like ‘Apan’ and ‘Sukhi’ brands, enough for three months, at the end of March which the women had during the lockdown period.

Mothers of infants in DNCC stated that during the early stage of the pandemic there was no disruption in contraceptives use or change in methods, although one mother used to take birth control pills before the lockdown, but after lockdown, she did not take any pills. Mothers residing in DNCC were able to avail pills and injections from nearby pharmacies which remained open during the lockdown (end of March-end of May 2020).

Similarly, in Rupganj, mothers were able to manage birth control pills from FWAs who lived nearby. No disruption or change in contraceptive methods was reported.

According to an FWA in Bholabo union, at the beginning of the lockdown (last week of March), the amount of male condom delivery was the same as before (300/400 packets). However, the quantity of ‘Shosti’ injection, implant, female sterilisation and NSV (Non-Scalpel Vasectomy) services reduced to zero. She shared that she could not provide ‘Shosti’ injection to women and if a woman's 3-month period of ‘Shosti’ injection expired, the FWA would advise her to take ‘Sukhi’ pills or use condoms. During the period between June and August, when the lockdown was gradually being lifted, she resumed domiciliary services and currently the continuity of work has returned.

Another FWA in the Bholabo union reported that at the beginning of the lockdown, fieldwork had stopped for about 15 days from 18 March to 4 April 2020, so she would work from the community clinic. She provided similar advice to the FWA above to mothers using injection.

During the lockdown, the FWAs were unable to function in the customary routine of visiting houses, attend SCs, and community clinics on a regular basis, and so were unable to offer enough contraceptive supplies and counselling to eligible couples. After the lockdown was lifted, service providers were able to deliver services much more consistently as patients started seeking treatment, taking medications, and undergoing routine check-ups. However, there were exceptions in domiciliary services as expressed by an FWA in Bholabo union.

“Community people used to offer us to sit (before pre-COVID-19). When the lockdown was lifted, they would not allow us to enter the house. If I wanted to go to their house and provide services, they would say, “Do not enter the house, it (the virus) will enter the house along with you.” That is why my service delivery continuity was hampered, even after lockdown.”
-FWA, Bholabo union

5.2 Maternal and Neonatal Health

Among the DNCC participants who were pregnant in early September 2020, each of them first underwent a pregnancy test at home on the advice of a brac sebika, and then conducted a urine test at a private diagnostic centre. Except for one mother, none of them received all the required ANC visits. One mother reported receiving one ANC check-up, while another mother had taken service from a brac sebika 7 times during her pregnancy as she suffered from physical weakness.

A woman who was 9 months into her pregnancy in the Bholabo union shared, “I got ANC services from a gynaecologist when I was 3 months into pregnancy. I also had ultrasonography. Apart from this, I have taken a TT vaccine in the early period of COVID-19”. Another currently pregnant woman shared, “I visited the FWC and checked my weight, I also received calcium and vitamin tablets from there”. The pregnant women in Pubergaon shared that they got pregnant during June-July 2020. So, they started to take ANC then and afterwards without any difficulty. One woman said that she got iron and calcium tablets once from the community clinic in early March 2020. After that, she did not get any more, and did not buy them herself. Other women shared that they do not get the opportunity to measure their weight and blood pressure at the community clinic, as the measurement machines there are not working.

A new mother in Bholabo union, who became pregnant during the lockdown confirmed her pregnancy using a kit purchased from a pharmacy. She raised concerns about missing her first ANC service as a result of the lockdown. during that period, the health worker did not visit her house. But in early May, by which time the woman had missed her first ANC, the designated health worker resumed home visits and held consultations from outside the house. This is not a unique phenomenon, as a Ghanaian study revealed that the majority of the women missed an ANC appointment owing to the fear of COVID-19 infection transmission (Moyer et al., 2020).

The participants who delivered in August 2020, were only able to take two ANCs during the lockdown and underwent ultrasonography at a private hospital in July 2020. They consumed folic acid and iron tablets regularly. One new mother in Rupganj informed that her vaccination during pregnancy was delayed due to the lockdown.

Before the pandemic, the CHCP of a Community Clinic would refer pregnant women for further ANC and PNC services, and adolescent girls with severe anaemia to the UHC. She would provide regular services to 3 villages. According to her, the number of pregnant women seeking ANC visits has dropped to one-third of what it used to be. They postponed their vaccination dates due to fear of COVID-19 transmission. However, the withdrawal of the lockdown had doubled the patient flow and created difficulties for her to attend them. During this period (June), all services had resumed except for TB sample collection.

According to the senior gynaecologist at Narayanganj district hospital, continuity of regular services (ANC, PNC, institutional delivery) was disrupted during the early stage of the pandemic as patients avoided services fearing contagion of COVID-19. Hence, the prescribed number of ANCs did not take place. Gradually it returned to normal around June and August 2020, when pregnant women started coming for ANC visits.

The midwife of Rupganj UzHC shared that she was infected with COVID-19 in early April 2020 which forced her to remain in isolation for 14 days. According to her, during June and August 2020, although the number of mothers receiving ANC increased, it was almost half of the normal flow of service seekers. Currently, the midwives and other service providers are back to work, but the continuity of ANC visits has not been fully restored due to the patients' reluctance to avail the service.

The Civil Surgeon cum Superintendent of Narayanganj district hospital shared that as one of the government hospitals (300 bed) in Narayanganj was declared as a COVID-19-dedicated hospital, the regular general patients could not avail services from there. However, "people visited hospitals only in emergencies, not for services like ANC." This disruption of ANC visits was also reported in a report which stated that in contrast to July 2019, ANC visits were lower for ANC 2, ANC 3 and ANC 4 (Ainul et al., 2020).

The paramedic from Smiling Sun clinic in DNCC stated that the clinic's services were unaffected by the lockdown as she worked her regular hours, 6 days a week with no staff taking leave during that period. She maintained contact with pregnant mothers through her mobile phone, counselling and informing them that the clinic was still providing services as usual, encouraging many to come for check-ups. She contacted women who had missed their vaccine, and the satellite team also brought pregnant women to the clinic. As a result, she is certain that none of her patients were denied her services.

According to a village doctor from Bholabo union, once the lockdown started, the number of patients decreased due to panic and transportation issues. He did not face a major setback other than that, although he contracted COVID-19 and had to isolate himself for 14 days and could not provide any services during that time. Now, his services have returned to the pre-COVID-19 period with no disruption in the continuum of care.

5.3 Child Health

5.3.1 Immunisation

A mother of an infant in the Bholabo union mentioned that she could not vaccinate her child against measles on time, as the service was closed in May and had to wait till October 2020. Other mothers of infants in the same union were able to vaccinate their children on 'due' vaccines within a short time of service resumption (July-August 2020). One mother in Narayanganj city missed two doses of vaccine for her one-month-old child due to the lockdown (end of March till the end of May). The findings are consistent with another study carried out by WHO, which revealed over 360,000 children missed their third dose of the pentavalent vaccine during the timeframe between January and May 2020 (Wangmo et al., 2021). The study suggested that during the initial phase of the pandemic in April 2020, the government repurposed front line health workers to COVID-19, imposed travel bans and reduced outpatient visit hours which might have resulted in the decline in immunization in April and May 2020. Fear among service recipients could be another contributing factor.

> *"Usually, vaccines are given at school premises in normal time and it was not happening during the pandemic. I always tried to know the update when it is going to take place."*
> *-Mother of an under-five child, Narayanganj city*

Mothers of under-5 children in DNCC also stated that the vaccination program was unavailable for two months (end of March till the end of May 2020) in the lockdown period. But during June and August, their children started to receive vaccination as vaccination program resumed after closure, which continued normally during September 2020 till date of data collection.

A Health Inspector in Rupganj upazila, involved in a vaccination programme reported that during the lockdown, vaccination centres in houses could not operate and as a result, vaccination was non-functional for two months (26 March-30 May 2020). He further stated that the children who were not vaccinated during the lockdown, at the beginning of the pandemic, were identified and they were provided vaccines when the program resumed during June and August 2020. Health inspectors were prohibited from visiting anyone's house for vaccination at the beginning of the pandemic. The HI assured that from September 2020 till the date of data collection, the vaccination program is continuing without disruption.

The Health Assistant of Bholabo union stated that during the early period of the pandemic, vaccination of children was paused for about a month and a half. She also shared that during June – August 2020, the vaccination program gradually resumed, which became normal in September 2020 and remained so till the date of data collection.

An EPI Technologist in Bandar upazila, Narayanganj, stated that during June - August 2020, he worked simultaneously with the vaccine dropouts and had taken initiatives to run the EPI program in full swing. He prepared a list of the dropout children under their service coverage to ensure continuity of the EPI program. During 1 September 2020 - till date of data collection, they have been working on immunisations and all other vaccine-related work, including COVID-19 mass vaccinations, which were launched on 7 February 2021.

Likewise, an AHI in Bholabo involved in the inspection of 5 community clinics and 8 immunisation sessions along with the monitoring of 6 health assistants who provide ARI, diarrhoea, and EPI services said that during the early period of COVID-19, immunisation was non-functional. As a result, many children were unable to get vaccinated. House inspections were also closed.

A doctor from Smiling Sun Clinic in DNCC stated that she did not attend the clinic for two months out of fear between the end of March and the end of May 2020, and the continuity of services might have been disrupted for that. In the middle and existing phase, the continuum of care gradually resumed, although not like pre-COVID-19 times, owing to her illness and low attendance of patients.

5.3.2 Diarrhoea

Continuum of care was affected as the caregivers of the children could not or did not turn up with their children for follow-up, particularly during the lockdown. Likewise, patient attendance was almost negligible in health facilities as expressed by a paediatric consultant who provides both inpatient and outpatient child healthcare (diarrhoea, pneumonia) in Narayanganj. "I was in the hospital but there was no continuity because the patients would not come to the hospital out of fear of COVID-19."

5.4 Tuberculosis

In Rupganj, TB patients were provided with medicines for fifteen days by the brac sebikas. Similarly, in Narayanganj, TB patients who were diagnosed in June-August 2020, took medications from brac. The TB patients in Mirpur-1, DNCC, were treated by the Salvation Army after being diagnosed. The continuity of service during the lockdown (end of March 2020 - end of May 2020) was never an issue, as the Salvation Army service centres were always open during COVID-19 and two months of medications were given during the lockdown.

According to the brac sebikas in DNCC, sputum sample collection was halted for 15 days (from March 25 to the first week of April) during the early stage of the pandemic. Similarly, sputum testing was stopped for over a month in Rupganj. Some TB patients who participated in the FGD, mentioned that they continued to get services uninterrupted from some providers such as icddr,b, Jashim Hospital and the Salvation Army. However, the TB patients continued to take their medication, refilling the supplies from the brac office or the homes of the brac sebikas, as the number of house visits by sebikas reduced considerably. During 1 June-31 August 2020, when the lockdown was gradually lifted, the continuum of care was restored to the level of pre-COVID-19 times in Dhaka as house visits and sputum sample collection were back to normal. In comparison, Rupganj experienced a modest progress in the number of test rate increase, even after sputum testing was resumed, most likely owing to travel bans and fear. The brac sebikas stated that even on 1 June - 31 August 2020 period, as sputum testing facilities resumed, patients were still reluctant to take the service. In the current phase, continuity of the services has been restored fully and has remained intact in both DNCC and Rupganj.

5.5 Non-communicable Diseases

According to the UHFPO of Rupganj Upazila Health Complex, at the start of the pandemic (end of March), the continuum of care was disrupted, as patients suffering from TB, diabetes, and shortness of breath had stopped coming to the health facility. However, as the lockdown limitations were gradually relaxed, they began to return for their check-ups.

The COPD patients shared experiences of not visiting hospitals for check-up during the initial stages of the pandemic. There were gradual improvements in the situation as the lockdown was withdrawn. But as restrictions continued with transportation, offices, the workplace situation did not normalise until September.

> *"There was a fear among everyone, such that no one wanted to go to anyone for fear of being infected. I had to suffer a lot and had to rely on local pharmacies for medical services."*
>
> *COPD patient, DNCC*

A similar trend was observed for patients suffering from hypertension in Rupganj, Narayanganj and Dhaka (DNCC), as they could not visit hospitals for check-ups during the initial stages of the pandemic when the lockdown was imposed (end of March-end of May 2020). Consequently, the patients, in these areas, resorted to nearby pharmacies for these services. Exceptions were also observed as two respondents from DNCC could not afford medicines owing to financial constraints. During the period from June to August 2020, patients gradually started to consult specialist doctors and go for check-ups especially in Dhaka (DNCC).

Likewise, diabetic patients in Rupganj, DNCC, Narayanganj and Pubergaon village shared a similar trend, as they were unable to visit doctors and go for check-ups during the initial stages of the pandemic. Diabetics from Pubergaon village who would travel to Dhaka to seek treatment at the Diabetic Hospital were unable to come once the lockdown started. Similarly, diabetic patients in Dhaka were also not able to visit hospitals for check-ups during the lockdown. As the lockdown was gradually lifted and during the period between September 2020 and the date of data collection, normality was restored. Diabetics could go to the hospitals for check-ups and patients from the village were also able to come to the capital Dhaka for treatment. However, two of the respondents from Pubergaon village stated that due to financial constraints, they were unable to continue their regular diabetic check-ups.

The private hospital service providers in Narayanganj, and private practitioner physicians, in both Narayanganj and Dhaka city mentioned that they had very few patients coming to seek services once the lockdown was imposed. They attributed fear of being infected by COVID-19 and restrictions on transportations as the cause for patients not to seek treatment unless the condition required immediate treatment. The fear persisted for some time after the lockdown was eased, resulting in only gradual pick up in-patient flow seeking their services.

For coping with financial limitations, patients borrowed money from their neighbours or relatives to visit doctors when they became seriously ill, a trend which was observed in both urban and rural settings. Some patients such as the diabetics in DNCC resorted to local pharmacies which was a cheaper alternative. Lastly, owing to financial constraints, patients had to discontinue treatment which was observed both in Dhaka DNCC and Narayanganj.

For CHCPs, lack of medical equipment, such as a diabetes testing kit, was an additional issue in their work. The continuity of services was also interrupted as several medical officers in some facilities themselves tested positive for COVID-19 and had to stay in isolation.

One CHCP in the Bholabo union shared that, before the pandemic, there was a steady continuum of care with very occasional hurdles, which resulted due to lack of supplies of medicine and other related products. She was able to provide routine check-ups to patients with diabetes and hypertension, for example. When the lockdown started, during the end of March to an early week of April, the respondent did not face much difficulty in providing services, but during middle of April to end of May, it became more difficult for her to maintain the pre-COVID-19 level of consistency. Most of the difficulties arose from a lack of medicine and other supplies. This was the case for patients with diabetes and other diseases.

Other reasons include patients' lack of compliance in maintaining social and health guidelines e.g. patients' refusal to wear a mask. In the middle of the pandemic, her difficulties around medical supplies, fear of contracting virus, and commuting issues have subsided completely and subsequently resulted in an uninterrupted continuum of care. Now, the respondent feels much more capable of handling the continuity of services as she handled it during a pandemic.

The most regular patients for a village doctor from Pubergaon are patients with high blood pressure and diabetes and he would occasionally provide necessary maternity services. During the early period of the pandemic, he stopped providing services for patients suffering from high blood pressure, diabetes, and shortness of breath. Although they took medicine, they would not come for regular check-ups due to fear of transmission. As a result, the continuity got disrupted. During the middle part of the pandemic, as the lockdown was

gradually relaxed, services were still minimal as only a handful of patients with complex diseases visited him. He also mentioned that he gained a reputation for his commitment to provide medical services and advice amid the pandemic.

> *"Only a handful of people who trusted me would come to me for regular services such as measuring blood pressure or blood sugar."*
> *Village doctor, Pubergaon*

A drug seller from Bholabo believes the continuum of care was hindered due to fear of COVID-19 amongst patients, especially the ones suffering from diabetes and high blood pressure. He also added that the fear was prevalent in pregnant women, concerned about their unborn babies. As of now, all kinds of patients have started to visit him regularly. In fact, the number of diabetic and high blood pressure patients has increased to the level of December 2019. One drug seller from Bholabo said that the number of hypertension and diabetic patients dropped at his store for their regular drugs during the pandemic.

Before the pandemic, a pharmacist from Rupganj would check the blood pressure of 8-10 patients every day in addition to selling medicines. The pharmacist observed that many of his customers would buy more drugs, especially for cold, than usual before the pandemic. According to the pharmacist, during 25 March to the first week of April, no patient, except a few customers who came to buy Napa (Paracetamol) and other medicines, visited him. Elderly customers and children did not visit his pharmacy as they were the most vulnerable. During the middle of the pandemic, his father contracted COVID-19, which put him under a lot of stress. To take care of his father, he had to close the shop. As the lockdown relaxed, the number of patients also gradually increased accordingly. For the last 2-3 months, services are operational as they were during pre-COVID-19 times with patients visiting him regularly, for checking blood pressure and blood sugar.

A drug seller from Narayanganj sees all kinds of patients, including pregnant women, children, people with breathing difficulties, and those with diabetes and high blood pressure. In addition to seeing his patients, he also provides essential medication to them, such as vitamin, iron, and calcium pills to pregnant women; medicines for diabetes and high blood pressure patients; contraceptives for couples; and sanitary napkins for adolescent girls and young women. At the start of the pandemic, health care was substantially disrupted since many of his customers stopped visiting him, and he also stopped providing various services, such as monitoring blood pressure and blood sugar; providing first aid, such as treating wounds; injecting insulin, saline, and so on. He believes customers stopped visiting him mostly due to fear of contracting COVID-19. However, since June 2020, the number of patients suffering from diabetes and high blood pressure, in addition to pregnant women and adolescent girls, started to gradually increase. He mentioned that customers buying contraceptives also increased. Despite the increase in the number of customers, he still restricts himself from checking blood pressure and blood sugar. Despite the setbacks experienced during the early phase of COVID-19, the continuity of the above-mentioned services has now returned to the pre-COVID-19 period.

During the pre-COVID-19 era, a drug seller in DNCC, sold all kinds of drugs in his pharmacy, as well as medical equipment for measuring blood pressure. He kept his store open despite others being closed and as a result, people would visit his pharmacy. Many patients could not buy medicines due to financial crisis so he lent medicine to many people. Contraceptives were

sold in lower-than-normal quantities during that period. Patients who had previously seen him prior to the epidemic have now returned on a regular basis. Thereby, the continuum of care was maintained in some cases, but disrupted in others.

According to him, when all restrictions were gradually lifted, people started to come to the store like they used to before the lockdown. The people were less afraid at that time, although they still had financial problems. Although the sale increased, they did so gradually. But those who needed regular treatment would buy medicines like before. Later, when almost everything was operating as usual (November 2020 - February 2021), the situation became the same as before, with people visiting as they used to during pre-COVID-19 times.

During the early period of COVID-19, the sale and continuity of services, took a dip for a drug seller in DNCC. The dip was considered drastic but was a result of financial difficulties and fear of virus amongst the regular customers. Among his products, the sale of contraceptives declined substantially. However, continuity in cases of diabetes and blood pressure remained steady till now, as he lent medicines to his regular customers (who could not afford them at that time). Customers returned to his drugstore once the lockdown was lifted, just as they had before the epidemic.

Brand of Medicine

One prominent health personality reported during a KII that many patients were accustomed to a brand of medicine for treatment, supplies of which depend on travellers bringing them to Bangladesh. As international travel became restricted, supply of foreign medicine was hindered, and consumers were forced to switch to alternatives in many cases, disrupting the continuum of treatment. had to switch to alternatives, affecting the continuum of care.

A member of the COVID-19 Advisory Committee mentioned that drug stores/pharmacies are often a popular choice for people to check blood pressure and diabetes.

With the withdrawal of restrictions from transport movements, functioning of offices and workplaces returning to near-normalcy and the continuity of supplies (contraceptives, vaccines for immunisation, TB medicines) restored, the continuum of care has been restored to normal level gradually through the middle period of the pandemic and the post-restriction period. Visits for ANCs, diabetes, hypertension and COPD are continuing as normal, and the people can access service providers and pharmacies.

6 Findings and Discussion: Quality of Care

6.1 Perceived Quality of Care by Service Recipients

Key points

- The service recipients experienced varying quality of services from different facilities within same upazilas and districts, for different types of services.
  - The family planning services, i.e. availability of contraceptives was almost regular for temporary methods like oral pills and condoms. However, some beneficiaries had to shift towards temporary methods, instead of their long-acting methods, as they could not commute to the facilities. Some users of oral pills complained of side effects and discontinued of use of the contraceptives.
  - Quality of maternal and child health services were not affected by the disruption. Most service seekers expressed their satisfaction at the quality of care they received, despite the prevailing situation.
  - At some community level facilities and programs, the service seekers faced non-availability of service providers and 'unsatisfactory' behaviour of the service providers. The service seekers could not avail some services, as they were not available at community level facilities (community clinic for diabetes or hypertensive medicines). When they could reach the providers, they were denied services in many cases on suspicion of being infected by COVID-19 if they had similar symptoms, often not related with the ailments they were seeking services for. Children, particularly, were afraid of the appearance of PPE used by the service providers.
  - Most service users felt that the telemedicine services, introduced to overcome the disruptions caused by the pandemic, was not as good as the in-person services they had before the pandemic. They were also not as comfortable with the protective measures such as maintaining physical distance during treatment.
- The service seekers were cognisant of the constraints the service providers faced during the lockdown and were appreciative of the services they got.
- The service seekers complained about consultations and treatments they received through tele-counselling as being sub-optimal, as they could not be physically checked as would have been the case were, they able to get the service in person.
- The service seekers generally expressed happiness that they got the services from local pharmacies at a time when they could not visit their regular service providers.

The quality of services was perceived differently by the various women participants of the study who sought services from different places. In Rupganj upazila, a woman faced no difficulty in accessing her required services for contraceptives during the pandemic. When she ran out of pills, instead of the regular practice of getting the contraceptives from the community clinics, she collected them from the FWA's house during the pandemic and found the same "warmth and caring behaviour" she received before. The same positive experience was shared by the mothers living in DNCC as they received the same treatment for their children from the Smiling Sun Clinic even during the pandemic.

Mothers of newborn children from Pubergaon village expressed satisfaction with the services they received from the UH&FWC and the services offered by FWAs and FWVs. The somewhat

same experience was shared by the mothers of newborn children residing in Basunda, Bholabo union, who said the doctors, nurses, and other health workers always tried "to keep in touch with us whenever we needed them".

> *"Although the service was not that satisfactory, everyone made peace with it, as it was during a pandemic. So, we have to understand the situation."*
> *Mother of a newborn, Bholabo union*

Most of the pregnant women interviewed in DNCC reported having ANC check-ups by brac workers. They used to have a 100-Taka card and receive services. The women considered the quality of service as "very good" for the money paid and did not need to seek services elsewhere.

> *"Not much can be said openly to a male doctor, but we can explain all the problems to her, even in the pandemic situation as she lives nearby."*
> *Pregnant woman, DNCC*

Some mothers reported negative experiences in seeking health care during the pandemic. According to a mother residing in Pubergaon village, the behaviour of the CHCP was not as "good" as expected, and there was a shortage of medicines there during the pandemic. The mother also claimed that she was deprived of the services she needed, as she could not visit health facilities in the upazila or district due to the transport restrictions, and equivalent services were not available in the local community clinic.

Another woman from Narayanganj, who was using injectable contraceptives, was advised to take pills when her existing contraceptive expired amid the lockdown. As she suffered side effects from the pills, she stopped taking them. According to her, the quality of pills was not satisfactory, which was verified by other women residing in her locality. While some of the mothers residing in Narayanganj received better treatment in private hospitals, others did not. At times, the precautions for COVID-19 also affected how the services were perceived.

> *"My child got scared seeing the doctors wearing PPE."*
> *Mother of infant, Narayanganj*

Mothers from the Bholabo union spoke up about their unpleasant experiences with the community clinic being temporarily closed, especially during an emergency, and having a shortage of medicine. The closure of the community clinic made it difficult to get services at the time of the pandemic. In addition, reduced working hours in the facility made accessing services when required a challenge.

Similarly, mothers of newborn children from DNCC, reported that for several months, brac health workers did not visit the slums. The mothers also could not seek alternative healthcare or treatment due to financial constraints. A mother from Narayanganj district suffered from acute backbone, stomach pain, along with fever but was not allowed to enter the hospital on suspicion of having COVID-19 making her feel "neglected". Other mothers from her locality agreed and had no comment on the quality of service as according to them, they did not receive any during the pandemic.

Rupganj UHC was providing COVID-19 treatment so mothers did not avail treatment there for a long time (end of March to July 2020). At that time, they did not get in-person services like

normal times. The consultations they received from health care providers over the mobile phone was termed as "insufficient" and "unsatisfactory" for them. In addition, maintaining a physical distance at the pharmacies, was also considered "unsatisfactory" by Rupganj residents.

"We do not have pressure or weight measurement machines at our homes. How could the doctor prescribe medicines without measuring these? This was an essential part of care when we used to visit them before the pandemic."
Mothers of infants, Rupganj

However, pregnant women from Bholabo union expressed their sufferings during the lockdown, as they could not consult with an obstetrician due to transport restrictions. One of them said, "The FWAs provided their mobile numbers to us. We made a phone call to them in any emergency during the lockdown, and they advised us over the phone. However, this should not be equated with the services and counsel of expert obstetrician." As a result, the women felt that their required ANC services were "compromised".

Pregnant women in Narayanganj found the quality of services to be compromised when they were provided through a "distant mode". In the early days of the pandemic, doctors provided services maintaining a social distance, wearing PPE, masks and consulted patients sitting behind a glass or window. The nurses helped to measure the patient's pressure and give suggestions. The women were "dissatisfied" with this service modality.

"Doctors did not examine or check anything; they just prescribed medicine. The doctor did not observe from a close distance. We would have felt more confident if she had spoken to us face to face."
Pregnant woman in Narayanganj

TB service recipients served by the NGOs recorded their happiness, as services were free of cost and one NGO continued to supply nutritious food and fruits along with medications. They also appreciated the services of the government facilities for diagnosis and efforts of the brac sebika in maintaining a follow up for treatment continuation.

Patients with hypertension from Narayanganj reported their inability to check their blood pressure as and when needed. The pharmacies would require service seekers to maintain a fixed distance while delivering medicine and used a "designated basket" to distribute medicine. Female patients in Pubergaon complained that as health workers maintained a social distance from fear of contracting infection, the BP of patients could not be measured so they had to rely on medication alone. Other female patients from Bholabo union shared the same experience.

"Before Eid-ul-Adha (August), I went to the market to have my blood pressure checked, but the man in the shop drove me out of there, saying he would not measure because of maintaining distancing."
Female hypertension patient in Bholabo union

However, patients from Narayanganj expressed their satisfaction with receiving free consultation and cheap medicine from local pharmacies, instead of having to resort to expensive medical treatment considering their financial situation. The same applied to patients residing in DNCC. They said that at the beginning of the lockdown, they also took pressure check-ups and medicines from the pharmacies in their community. According to these

patients, the quality of service was considerably good, and believe that “it should not be compared to emergency services provided by hospitals”.

Diabetes patients reported difficulties during the pandemic, since most of them were unable to reach the hospitals they desired, particularly those living in rural areas. A female diabetes patient from Pubergaon complained that in the absence of adequate health care in the village, they had to rely on local pharmacies for regular check-ups. The standard of treatment was not regarded to be comparable to that of a medical practitioner.

Male diabetic patients expressed the same reliance on local pharmacies as they could not travel to hospitals. However, the perception of quality of care, resulting from the reliance on pharmacies and their modality of providing services with a safe distance, varied among the patients. Few male diabetic patients from Narayanganj reported controlling the level of their diabetes by taking medicine based on old prescriptions. Those who had a testing kit could measure their blood sugar at home. Others would have it measured at the nearest pharmacy. But there were several barriers. In the beginning, pharmacies were reluctant to provide services, which created the perception of a fall in the quality of services. However, some male diabetes patients from DNCC expressed their satisfaction at getting services–check-ups and supplies of medicines–from local pharmacies.

Most of the COPD patients–a female patient from Pubergaon, for instance – became somewhat dependent on nearby community clinics and pharmacies at the outset of the pandemic. The same applies to other female COPD patients residing in Bholabo union. They felt that doctors prescribed medicines them without properly listening to their problems, while maintaining a physical distance and wearing masks. Some COPD patients from DNCC, said that they used to take medicines following their old prescriptions and in case of difficulties, they visited the local pharmacies. A male COPD patient from Narayanganj got himself admitted to the hospital at the beginning of the pandemic but complained of not receiving proper treatment. He also found it difficult to explain his problems while wearing a mask.

6.2 Perceived Quality of Care by Service Providers

Key points

- Stoppage of home visits and in-person counselling during the lockdown period, adversely affected the quality of motivational activities of community health workers.
- The service providers felt that they were facing difficulty maintaining social distancing when providing services, they also felt that protective equipment restricted their close interaction with the service seekers and thus compromised service quality.
- Both public and private service providers felt that they worked under stress and thus were compromising the quality of services, as the facilities suffered from provider shortages, which arose from those elder or with co-morbidities being discouraged from working as well as some service providers being engaged in COVID-19 specific services or contracting the virus themselves.
- According to the doctors, as they were providing services maintaining distances with masks (for them and service seekers), the quality of some of the services such as COPD, was compromised because of the very nature of work that is required for treating such diseases.

Most of the FWAs in Bholabo union could not conduct home visits during the early stage of the pandemic as they would before the COVID-19 pandemic. This hampered interpersonal communication and motivation activities regarding contraceptive choice and decision, ANC visits, nutrition intake during pregnancy, institutional delivery etc. with the target clients. They also could not organise SCs where they had face-to-face interactions while providing services. As a part of the central motivational campaign (from DGFP) during the pandemic, they started (from mid-April) motivating the eligible couples and women not to conceive during the pandemic. Instead of focusing on in-person communication, they resorted to telephone calls and using audio-visual vans for this campaign.

They took different approaches to cope with the emergency regarding service provision and continuity. For example, instead of 'Shosti' (a 3-month contraceptive method) injections, they suggested (over the phone) to adopt taking Shukhi pills (oral contraceptive pills) or male condoms as contraception without "much consultation and discussion".

> *"During the initial stage of the pandemic, we provided services at our centre by maintaining a safe distance in the first two months. We faced problems in providing services to couples as we could not have discussions with them closely. SCs were closed in the first month of lockdown. In terms of providing service with maintaining safety protocol, the quality was good throughout the time".*
> *Family Planning Inspector (FPI), Bholabo union*

A Family Welfare Visitor (FWV) from Bholabo UH&FWC reported few patient visits during early period of the pandemic and she was happy with the quality of the services that were provided. By maintaining safety protocols, she was able to use equipment such as the BP measuring machine, weight machine highlighting that the quality of service was never compromised.

Due to the lockdown and transport limitations, community people failed to avail services from elsewhere and thus gathered at the CCs and UH&FWCs. This extra load affected the quality of care in those facilities, particularly when the health workers were struggling to maintain the necessary physical distance. The increased load also quickly exhausted existing medicines and owing to the negative impacts of the lockdown on the supply chain, many people were unable to receive enough medications. The CHCP of a community clinic also shared that it was difficult to make the service seekers understand the need to maintain healthcare guidelines for COVID-19 prevention. As a result, it was often not possible to provide services properly, with quality and maintaining safety measures.

ANC and PNC services were provided maintaining a social distance, and there were "no complaints from the patients", as expressed by a nurse at the UPHC clinic in DNCC. The respondents mentioned that there were no instances where untrained attendants took over the responsibilities for delivery. But in times of shortages of regular staff, the patients were referred to another nearby medical centre.

A Health Inspector (HI) from Rupganj upazila reported not performing EPI and house-to-house inspections for about a month and a half. Home visits were also closed during the lockdown. He was assigned to the Corona response team hampering his regular activities and the quality of service. Echoing the same, an Assistant Health Inspector (AHI) from Bholabo said that

many children and pregnant mothers could not be vaccinated on time as the EPI was non-functional during the lockdown -considering this to be a reduction in service quality.

“Not performing regular assigned services on time is the same as having a fall in the quality of service”.
Assistant Health Inspector (AHI), Bholabo union

An EPI technologist from Sonargoan Upazila, Narayanganj, said that during the lockdown period, their EPI program was non-functional, and he was assigned the responsibility of collecting COVID-19 samples. The same happened with another EPI technologist from Bandar Upazila, Narayanganj. According to them, although their assigned activities could not take place, they did not “compromise” the quality of their new service of collecting samples which were also necessary at that time.

Regarding TB, brac sebika perceived that stoppage of sample collection of potential TB patients, for screening, due to lockdown resulted in a quality of care issue. Quality of services was also perceived to be compromised, as they were unable to visit TB patients for compliance with DOTS and were following up on them via mobile phone. Brac sebikas reported that as soon as they received personal safety equipment for conducting sputum tests of their TB patients, “quality of services started to improve”, compared to the early stages of the pandemic.

A Health Assistant (HA) from Bholabo union said that overall service delivery was stalled when the lockdown was imposed. There is “no opportunity to comment on the quality of care as there is no service”. The services that he was supposed to provide regularly were temporarily shut down. Instead, he (with his other colleagues) was engaged in the COVID-19 response team. Another HA said that at the beginning of the lockdown, she stayed home and stopped providing services for the time being. “As people did not allow her to enter their houses out of fear”, she was unable to serve them as she used to before COVID-19.

Similarly, a drug seller in Rupganj upazila reported being unable to serve clients as he used to before the pandemic. He did not measure the BP of any patient for fear of getting infected. Another drug seller, in Narayanganj, said that he did not even touch a child when they visited with problems. The same applies to another drug seller from Bholabo union. All of them admitted that this “protective attitude” sacrificed their quality of care compared to the way they used to serve before the pandemic.

However, a drug seller from DNCC, did not stop serving his patients out of fear of the virus. Rather, he visited the patients and served them with medicines and other essential supplies even during the lockdown (April and May). The doctors would not visit homes to give treatment, but he would. He gave free medicines to the people in need. He had close contact with his regular clients, especially those suffering from hypertension and diabetes, and the clients also had “confidence in him”, reflected by them reaching out when they faced medical emergencies. According to him, the quality of his service did not decrease during the pandemic, but rather, “he served differently with mental satisfaction that he was helpful to the people in an emergency”.

In the words of a nurse from UPHC clinic in DNCC, the quality of care did not decrease for maintaining distance. She would listen to the patients with more time and provide treatment

accordingly. Another nurse from a private hospital in DNCC said that the number of their routine check-up patients decreased during the lockdown but they provided services for shortness of breath to 8-9 patients daily and dialysis services to 2-3 kidney patients weekly with “quality as before the pandemic”.

Shortage in human resources was a commonly cited scenario by the respondents from most health facilities during the pandemic. The national guideline reveals that those providers with co-morbidities, pregnant women and the elderly were discouraged to work during the pandemic. This created an additional workload for those deemed “fit” as service providers. According to government guideline for community health workers, they tried to serve people with quality, but it was not always possible as “expected because of additional activities being transferred from other colleagues who could not work or were in isolation as COVID-19 patient”. Besides, the doctors and nurses were also occupied in ICUs, which “hindered” their routine services in outpatients and inpatient department.

From the viewpoint of doctors, not all of them experienced the pandemic in the same way. Those working in government institutions received adequate medical facilities and were provided with necessary safety equipment by April so as not to compromise their service during the pandemic. According to them, even though the number of patients increased, they had not compromised their duties, nor the quality of service. Also, they received necessary equipment and medical facilities from other agencies like UNICEF. Whereas the doctors from the private sector reported purchasing safety equipment with their own money. They believed that the quality of services decreased during the early days of the pandemic. According to the doctors in both sectors, as they were providing services maintaining distances with masks (for them and service seekers), they felt that the quality of some of the services such as COPD was compromised because the very nature of the identification of the disease required close contact with the patient. Maintaining a ‘no-touch policy’ also hampered treating general patients, since they were not used to functioning in this manner prior to the pandemic.

A village doctor from Bholabo union experienced a shortage of medicines and did not have his PPE, as a result, he referred his patients to other places. The patients at first took the social distancing or safety measures (hand sanitiser, gloves, masks) adopted by the health practitioner ‘wrongly’, however, later they were able to understand the necessity of it. Another village doctor from Pubergaon said he did not have the necessary PPE and he bought masks and gloves with his own money. Risking infection, he continued to provide services to the patients. However, both said that the quality of their services increased from the very moment the lockdown was lifted and people “became accustomed to taking service with safety measures”.

Different diagnostic labs were open during the pandemic, but the number of service seekers of routine services like ANC decreased and so did the number of tests. Later, since early April, they worked collecting COVID-19 samples and visiting door-to-door to collect samples from symptomatic patients.

“As our hospital services were completely closed during this period, we worked at the field level. We collected COVID-19 samples by going from door to door, sending the sample to the PCR lab and ignoring the risks to our lives. The tasks were accomplished by maintaining the required quality. They maintained all the health and safety regulations as the government enforced strict safety and hygiene precautions.”

Lab technologist from District Hospital Narayanganj

A lab technologist from the UPHC clinic in DNCC reported no change in the quality of his service as a result of the lockdown. He used to collect samples from the patients using necessary protection (mask and PPE) and wore an apron when he did not have a PPE. Another technician from the Smiling Sun clinic received all the necessary equipment for safety from the clinic, hence, there was no inconvenience, hindrance, or obstruction in the provision of services and "quality of care was not compromised".

According to a midwife from Rupganj UHC, at the beginning of the pandemic, the most concern regarding the quality of services was safety, which was solved by April. Having been provided with all the necessary health equipment like PPE, gloves, masks etc., she "even delivered a child of a corona patient".

The nurses expressed a similar viewpoint in maintaining their quality, with some conducting additional duties to provide services to patients, as mentioned by a senior staff nurse from District Hospital Narayanganj. However, the shortage of manpower was always an issue when providing quality service, and this was "severe" because of health workers getting infected, unavailability of workers because of their co-morbidity, pregnancy, and other sicknesses during the pandemic period which continued to prevail.

Nurses and midwives performed their duties as in the pre-COVID-19 period. A senior staff nurse from Rupganj UHC said, "Even though we were advised to keep physical distance from the patients, we stayed close to them for performing our duties and commitment." However, a midwife from Rupganj Upazila Health Complex reported that they are not receiving the extent of training that nurses receive, which they mention is necessary for providing quality services.

7 Findings and Discussion: Reporting

Reporting at different levels (including community activities) and facilities of the government was found to remain unaffected during the pandemic.

HAs report once a month and submit reports through mobile phone. Reports are sent by HAs to their supervisor AHI, who compiles them and forwards them to UzHC. During the IDIs and FGD, all the HAs reported the timely submission of reports, which was later confirmed by the AHIs and HIs. Only one HA regretted not submitting the report in March 2020 and another spoke about occasional delays of 2-4 days.

"I submitted timely reports by going to the UzHC even during the lockdown. There was no deviation in report submission."
AHI of Bholabo, Rupganj

FWAs report fortnightly and monthly to their supervisor FPI, who compiles and submits reports to the Upazila Family Planning Office (UFPO). During IDIs and FGDs, all the FWAs informed about the timely submission of the report which was also confirmed by the FPI.

"We submitted reports on time. When the performances were less due to COVID-19, we also reported less. Everyone knows about less performance, so no problem arises."
FGD of FWAs participants

CHCP reports to AHI monthly for CC activities. Both the CHCPs informed about due submissions of reports, though one mentioned delay by a few days during the lockdown period.

FWVs report for their activities in the SC and UH&FWC monthly to the UFPO. All the FWVs participated in the FGD and IDI informed about timely submission of reports.

The UH&FPO prepares the report for the monthly activity at the UzHC, and he ensured that all reports were submitted on time.

"During COVID-19, Report submissions were as before and faced no difficulties in timely submission of the reports."
UH&FPO, Rupganj

The Civil Surgeon of Narayanganj district and Director of DMCH also reported that reports were submitted on time, even throughout the lockdown period and throughout the pandemic.

Management Information System (MIS) of DGHS confirmed the timely receipt of the reports.

"As the reporting system is digitalised, COVID-19 didn't affect it. We didn't face any difficulties in timely receipt of the reports."
KII related with MIS, DGHS

8 Findings and Discussion: Barriers

Key Points

Barriers faced by healthcare providers

- Lack, compromised quality and insufficient quantity of personal protective equipment
- Lockdown led to transport unavailability. With the withdrawal of lockdown, limited transport options with increased fare
- Harassment from law enforcing agencies while commuting to workplaces
- Fear of contagion from health facility and patients
- Fear amongst family and landlords of service providers
- The need to practice preventive principles of COVID-19, unhappy patients
- Shortage of medicine and equipment
- Shortage of health human resources
- Few differences observed in urban and rural, public and private

Barriers faced by healthcare seekers

- Financial constraints
- Transport was initially unavailable, later available with increased fare
- Travel restriction affected rural service seekers more than urban dwellers
- Community clinics, pharmacies operated with little to limited capacity
- Fear of contagion
- The need to practice preventive principles of COVID-19

8.1 Barriers Faced by Service Providers

The declaration of a general holiday (similar to lockdown as enforced in other countries), effective from 26 March 2020 for 2 months and 6 days, enforced physical distancing measures and movement restrictions to combat the spread of COVID-19. This became the first barrier for the health and family planning field workers as it abruptly and universally restricted access to routine healthcare services.

On typical holidays, health workers do not work. For this general holiday, there was no guideline for the health workers from the authorities. Service providers, in general, were not accustomed to standard infection prevention practice, so masks and PPE gowns were unavailable. Initial supply by the government was of compromised quality and insufficient quantity. In many instances, service providers paid for their protective equipment, posing a financial burden.

As movements were restricted particularly during the lockdown, people were unable to avail services of UzHC or District Hospital and thus ended up turning to the CCs and U&HFWCs where the extra load led to a shortage of medicine.

With the emergency medical system focused on containing COVID-19, health workers were assigned new roles, often disabling them from carrying out previous services. This burdened the already weak human resources for health.

This section goes on to showcase the different barriers faced by service providers in both public and private health sectors, followed by the barriers experienced by health service seekers in urban and rural areas.

Protective Equipment

Lack of protective equipment was a common problem among healthcare providers, including those working in the field. According to an EPI technologist at Bandar upazila in Narayanganj, both the number and quality of PPE was insufficient to protect them when collecting COVID-19 samples. A health assistant in Bholabo union reported receiving only three sets of PPEs since the onset of the COVID-19 pandemic. A senior nurse at Narayanganj District Hospital perceived the lack of PPE and safety equipment was because Narayanganj District Hospital was not dedicated to treating COVID-19 patients. Only at the Smiling Sun Clinic did a medical officer report receiving a sufficient quantity of PPE equipment.

An FWA purchased PPE equipment at her own expense. This practice was more widespread amongst healthcare providers in the private sector.

"No one provided this (protective equipment) to private practitioners, so we had to buy them ourselves, spending half our salary."
Doctor at Private Clinic, DNCC

In the absence of protective equipment, many, such as a village doctor in Pubergaon, could not provide healthcare. According to a private physician at a hospital in Rupganj, local administration had made false promises of providing PPE to them.

For healthcare providers that had PPE, wearing it during work had its own set of challenges. A senior staff nurse at Rupganj UzHC faced multiple problems, such as cough, allergy, fever, and shortness of breath when she wore PPE due to the discomfort it caused during the heat. Her colleague, an RMO at Rupganj UzHC, suffered from dehydration due to excessive sweating while wearing PPE. The RMO recounted the tragic story of a pregnant nurse who lost her baby for similar reasons.

Travel restrictions

The national lockdown halted transport and restricted the movement of people. Service providers were unable to attend health facilities, particularly those living in distant locations. When the lockdown was withdrawn, public transportation resumed service at half capacity (to maintain distance between passengers) and at a higher cost, posing an additional barrier in the form of a financial hardship for many service providers.

For a CHCP, travelling was the biggest problem, as the daily commute to the CC was not only difficult, but also costly. It was a problem even for a physician at UPHC clinic who, despite having a private car, still faced challenges with her driver who panicked when having to report for duty. Restrictions only allowed a village doctor in Bholabo union to visit patients who resided within walking distance. A brac sebika in Rupganj found it difficult to make house visits to TB patients and to have patients visit her home, both of which hampered the continuity of their treatment. DMCH originally made transportation arrangements for its personnel when the lockdown was enforced, however it was difficult for individuals living far away to use this service and the arrangement was transitory as it eventually discontinued.

During the lockdown, blockades were set up in various places, causing a village doctor to scout different routes to bring medicine to his community. Sometimes, even that was not possible. At these blockades, healthcare providers underwent police interrogation. This was the case for a general physician at a private hospital in DNCC who, after working long hours on a night, accidentally left his ID card at the hospital. A drug seller in Narayanganj faced police inquiry during movements from his house to the pharmacy. A paramedic at DNCC's Smiling Sun Clinic faced multiple challenges in reaching the clinic from her house. These included encountering several police checks, using different means of transport, paying expenses three times more than usual, and occasionally having to walk 11 kilometres when the increased fares were unaffordable. Nurses at Narayanganj District Hospital faced similar ordeals expressing frustration while walking to the hospital.

In the absence of transportation during the lockdown, a HA would walk wearing PPE to collect COVID-19 samples from patients and back to the clinic. The excessive perspiration of walking in a PPE resulted in him feeling unwell regularly.

Lockdown brought about other transport challenges for public healthcare providers. Firstly, FWAs in the Bholabo union were neither able to provide door-to-door service, nor set up SCs. Secondly, with mobility restrictions and with the possession of only one ambulance at the UzHC and Narayanganj District Hospital, a limited number of patients could be transported using an ambulance.

Fear of contagion from patients

Fear of contracting infection also existed amongst healthcare providers. The biggest challenge during the pandemic for a HA was treating patients who refused to wear masks or follow necessary health guidelines, prompting her to fear for the safety of her and her family. In such instances, a CHCP chose to discontinue her services to these patients. A village doctor complained not only of being visited by patients without masks, but also by individuals who did not use hand sanitisers or wash their hands frequently. The behaviour of these patients restricted healthcare workers from providing services many times. A medical officer at Smiling Sun Clinic to date continues educating patients on these measures to minimise the risk of COVID-19 transmission. As raised by an outpatient MO at DMCH, many trainee doctors did not work during the pandemic due to the fear of contagion while providing healthcare.

"During the onset of COVID-19, I did not attend the clinic for around two months. My outpatient services to patients had stopped during this time. But if any familiar patients called me over the phone, I suggested treatments to them."
Doctor, Smiling Sun Clinic, DNCC

Healthcare providers, in particular nurses, experience a great deal of psychological distress and fear during care of COVID-19 patients, ranging across 11 categories from anxiety due to the nature of the disease, through to fear of infecting the family (Galehdar et al., 2020). From the qualitative interviews, nurses were reportedly the most exposed to COVID-19 infection. According to a senior staff nurse at the UzHC, the increased vulnerability of nurses was due to the noncompliance of public health measures by patients and their companions. As revealed by a nurse supervisor at DMCH, patients admitted in the general ward were not tested for COVID-19. Only if symptoms later appeared would they be examined and admitted

to the COVID-19 ward. As a result, the nurses in the general ward were more affected by COVID-19 in comparison to the nurses in the COVID-19 ward.

A private physician said various groups of patients emerged after the pandemic started. One group consisted of patients suspected to have COVID-19 but refused to be tested fearing a negative outcome, another group having COVID-19 positive patients who hid their reports, and the third having COVID-19 patients who refused hospital admission. As these patients continued to visit the doctor's chambers, COVID-19 infection spread, among others.

"Many COVID-19 patients visited hospitals after taking Napa (paracetamol) to make the fever subside."
General physician at Private Hospital in DNCC

A medical officer at Narayanganj District Hospital admitted that it was not only the patients, but also care providers that could not follow the necessary safety measures, as the government supply of PPE was insufficient. He added that at times, patients would take off their masks to talk which heightened the COVID-19 exposure risk for the serving doctor.

This fear of contracting COVID-19 existed not only for the healthcare provider's safety, but also for his/her family. To maintain precaution, an RMO at Narayanganj District Hospital reported washing his clothes and maintaining isolation after returning home where his family also resided. For similar reasons, midwives at the UzHC were forced to stay in quarters next to the complex when the lockdown was enforced. Taking care of their mental health while living in isolation in the quarters was a huge challenge, as they lived separately from their families for an extended period.

"At the beginning of the pandemic, there was a shortage of protective equipment so we worked with no PPE, no gloves, and no masks, as a result, many workers and doctors became infected with COVID-19."
Midwife, Upazila Health Complex, Rupganj

"After hospital duty, I would wash my clothes, stay single in a room and away from my family. This was a completely new experience for me. I would fear contracting COVID-19 and spreading that to my family."
RMO, Narayanganj District Hospital

Fear amongst family and landlords of service providers

The fear amongst the friends and families of service providers spreading COVID-19 was apparent. Community members in general perceived service providers as a possible source of infection spread.

"I experienced many hurdles in providing services during the lockdown. As I had to go to homes of COVID-19 patients, my neighbours put me in isolation. I had a mental breakdown."
Assistant Health Inspector, Rupganj upazila

To avoid isolation from the landlord, a laboratory technologist at Narayanganj District Hospital withheld the fact that he collected COVID-19 samples from his landlord, fearing he and his family would be forced to relocate. His family was also unaware of this job responsibility, as he feared restrictions in doing his job and that it would cause them to be concerned. Although

the family of a nurse never stopped her from conducting her professional responsibilities, she endured mental distress from the landlord's rude remarks whenever she left the building, and the fear with which everyone would run away when she returned home. A physician shared the story of a colleague who lived in a restricted neighbourhood and was not allowed to leave for duty inevitably forcing her to change houses.

The family members of a private physician in Rupganj upazila mentally suffered from living in constant fear of contracting COVID-19 as a result of her job. For the same reason, her relatives did not visit her home. She recounted a story of a physician couple in her community who died from COVID-19 a week after conducting a caesarean operation. This incident created fear and stress amongst her colleagues and family members. To reduce the possibility of contagion among family members of a nurse at a UPHC clinic in DNCC, the children stayed away from her at home.

Fear of COVID-19 among the general public

When the pandemic began, followed by the nationwide lockdown, there was fear regarding COVID-19 amongst the public. This fear of COVID-19 may be a result of low awareness creation from responsible authorities and the lack of preventive principles of COVID-19 being practised (Tadesse, 2020).

Due to this fear, community members did not allow the health and family planning field workers to enter their homes, which posed as barriers for their work. They also did not allow courtyard meetings, or for conducting SCs and EPI outreach sessions in their home premises, posing further barriers for health care providers.

"People were uncooperative in receiving services, due to fear of COVID-19".
FGD with FWAs, Bholabo union

A HA was refused access to public transport when he wore PPE because commuters feared he had interacted with COVID-19 patients and so could transmit the virus. Thus, he would walk to his destinations. Another HA was demotivated to provide services when people in the community would not allow him to conduct home visits. During the FGD, HAs narrated instances where they had to work in the rain and thus get wet because people did not invite them to sit in their homes fearing the transmission of COVID-19.

At first, an EPI technologist from Rupganj UzHC was able to continue conducting EPI sessions at people's homes. But as fear heightened among the community, they expressed irritation and anger when it got crowded, making it uncomfortable for the providers to continue, and insulting the patients. As revealed by the EPI technologist, people perceived them to be spreading COVID-19 and so they deliberately delayed immunization fearing the possibility of being infected. As was the case in Karachi (Chandir et al., 2021) movement restrictions and concerns around COVID-19 exposure prevented community members from seeking immunisation services.

"People thought EPI technologists were spreading COVID-19, so we faced many challenges vaccinating people at their homes and would have to explain to our patients the importance of completing vaccine dosage."
EPI Technologist, Araihazar

Medicine and equipment

FWVs in Rupganj complained of repeatedly being called thieves by people having the misconception that FWVs sell government-supplied medicine instead of providing them to the community. In reality, they are only provided selective medicine by the government.

> *"Although it was not a problem at the beginning, later I faced issues providing regular services when there was a shortage of medicine and medical equipment. As there was an influx of patients, the amount of medicine allocated for my clinic depleted quickly, so when the diabetes testing kit ran out, I could no longer check glucose levels of patients."*
> *CHCP, Community Clinic, Bholabo union*

Drug sellers in Rupganj upazila and DNCC faced barriers due to disruptions in the supply of medicine. The first of the two drug sellers had to later close the pharmacy after his father got infected and people stopped interacting with him. The other drug seller lent medicines during the pandemic, resulting in him becoming a debtor of his own and then not being able to purchase more medicine even when there was a regular supply.

The need to practice preventive principles of COVID-19

The practice of social distancing as a safety measure for both providers and patients interacting was new for everyone to comprehend and adapt to. Healthcare providers found it challenging to provide proper care from a safe distance. A Bholabo union FWA was saddened that she was unable to touch pregnant ladies when delivering care. Another FWA found it challenging to provide her regular service, which included sitting and talking to patients as she would normally do before the COVID-19 era. With the new arrangement, she failed to meet her work targets.

On the other hand, the EPI technologist at Bandar Upazila found it tough to maintain social distance during the EPI program. A HA of the Bholabo union was discouraged by homeowners from providing vaccination in a local house because it got too crowded. Many people were reluctant to provide chairs or tables during a vaccination session. In addition, it was difficult for the HA to provide vaccination services single-handed.

Unhappy patients

The rigorous public health measures, which are essential for managing the COVID-19 pandemic, require the understanding of both service providers and seekers. According to an MO at Narayanganj District Hospital, when patients were requested to speak from a safe distance, they were reluctant and unsatisfied by the treatment, as they perceived the doctors as being insincere in their line of duty. Senior staff nurses in DMCH also faced challenges in making patients wear masks.

> *"Many people would get angry if they were asked to wear masks."*
> *FWV, Bholabo union*

Both the MO and nurse at a private hospital in DNCC found patients to be unhappy or even angry at times when healthcare providers wore PPE or masks for protection. During such instances, it would be difficult for them to provide proper care, especially if patients misbehaved.

Human Resources for Health

Shortage of staff was a widespread problem across all health facilities, and the reasons were multifactorial.

Firstly, it is already evident that high workload pressures prevail for physicians and nurses at the UzHCs (Joarder et al., 2020) pre-COVID-19 with physicians having a very high (WISN ratio 0.43) and nurse high (WISN ratio 0.69) workload pressure. As reported by a senior staff nurse in Rupganj UzHC there are 21 nurses in a 100-bed hospital, hence manpower crisis is a barrier to service delivery. In the absence of an ambulance driver, laboratory technologists had to drive the ambulance, disrupting their regular services. The vacant SACMO post in the Bholabo union resulted in a heavy workload for the FWV.

"I am a lab technologist and I have a medical technologist with me; only these two posts, and we are two people. We are responsible for the whole upazila. It is very difficult to work."
Laboratory Technologist, Rupganj Upazila Health Complex

The RMO at Narayanganj District hospital voiced concerns regarding the inadequate number of staff personnel which exerted both physical and mental pressure on existing regular staff along with patients not getting proper service on time. The same concerns were mentioned by DMCH officials.

Secondly, the pandemic made the scarcity of manpower even more profound. Nurses at Narayanganj District Hospital mentioned operating on double duty when colleagues tested COVID-19 positive.

Thirdly, as explained by a midwife at Rupganj UzHC, during the pandemic, healthcare providers had to work on a roster basis and then stay in isolation for a period, which fuelled the manpower crisis and at times increased the workload for others. The initial practice of working for 7 days, then remaining in quarantine for 14 days before the start of another 7-day shift, resulted in a shortage in the health workforce, and was thus a barrier to service provision.

"It is very difficult to handle everything alone, especially during child delivery."
Midwife, Rupganj UzHC

There were newly assigned roles including laboratory technologists to collect COVID-19 samples by visiting suspected households and/or in the facilities; field workers and their supervisors in contact tracing, enforcement of household lockdown for the identified COVID-19 cases and/or returnee migrants with follow up of their conditions. All these additional tasks disabled the health care workers from fulfilling their regular responsibilities.

In addition to having a pre-existing manpower crisis, the DMCH authority reported of logistical, financial and bureaucratic complexities all compounding the barriers of the institutions in providing healthcare services.

8.2 Barriers Faced by Service Seekers

Most people, irrespective of being in urban or rural localities, were not able to follow up with doctors. Rural dwellers faced additional challenges owing to travelling difficulties as healthcare facilities were usually located far. Fear of getting infected with COVID-19 and absence of

physicians from the clinic were also stated as reasons by the service seekers. Financial constraints brought about by stay-at-home policy during the lockdown or existing conditions caused further challenges in seeking and continuing healthcare, often compounding the delay. The need to practice safety measures and reap the benefits of telemedicine needed habituating for patients.

Some facilities stopped providing services, particularly in the private sector. Many private practitioners stopped practising. Even the drug store/pharmacy in the neighbourhood restricted service delivery including diabetes monitoring and BP.

Some services at the government facilities have a user fee provision, which also was a barrier for pregnant women. TB patients required to collect DOTS medicines every 15 days from the brac office was also cited as a barrier.

Financial constraints

As the lockdown brought the nation to a standstill, it affected the population economically by imposing the stay-at-home policy, leading to reduced earnings, thus compounding the delay in seeking healthcare (Goyal et al., 2020). For instance, a pregnant woman in the Bholabo union faced financial difficulty as her husband, an autorickshaw driver, could not work during the lockdown and so she was unable to timely consult a doctor.

Some households had financial constraints before the pandemic. Female diabetic patients residing in Pubergaon village reported not being able to do regular check-ups nor take regular medicine because they could not afford these. Only when they were ill would they seek treatment, but that, too, for a brief period. The lockdown to combat COVID-19 put a strain on the family's earnings, worsening their financial condition and further limiting their ability to seek healthcare. Even after the lockdown was lifted, their financial situation had not improved, so affording medicine prescribed by the doctor was still challenging. Female hypertensive patients reported a similar situation that at present, with no lockdown but on-going pandemic, they are receiving services as usual, but it is still a struggle for them because of financial difficulties.

For mothers with young children, the irregular supply of medicine at community clinics caused them to purchase medicine from pharmacies, which added to their financial burden.

"The cost of transports increased after the COVID-19 outbreak, so we have to pay more fare to go to the clinic or hospital."
FGD, Pregnant woman, Pubergaon village

"We are poor people. If we get the right medicine at the community clinic, we don't have to spend money to buy medicine from the pharmacy."
Mother of children, Pubergaon village

A group of urban male COPD patients who pulled rickshaws or drove delivery vans in Narayanganj for a living became jobless when the lockdown was enforced. To them, this financial constraint was the largest barrier for seeking healthcare at that point. Pregnant women living in Narayanganj, mothers of a newborn in DNCC, and hypertensive and diabetes patients in Bholabo all reported being too financially constrained to seek healthcare. Female

TB patients in DNCC could not consume nutritious food as suggested by COVID-19 health guidelines for similar reasons.

According to a laboratory technologist at Smiling Sun Clinic, DNCC, the number of current patients is relatively less compared to pre-COVID-19.

"Most of the patients are insolvent, lower-middle-class people who have not been able to make up for the huge financial losses they suffered due to the lockdown. As a result, these patients only pay hospital visit when they are suffering from a major problem."
Laboratory Technologist, Smiling Sun Clinic, DNCC

Travel restrictions

A key lockdown feature was the non-availability of public transports. Even private transport movements were challenged by the law enforcing agencies. When the lockdown was lifted, public transports operated with an increased fare. This added financial burden also dissuaded individuals from seeking healthcare.

Travel restrictions were especially difficult for those living in rural areas who needed to travel far to reach a hospital to conduct diagnosis tests along with blood pressure and diabetes check-ups.

"There are no opportunities for diagnosis of diabetes locally and we are dependent on town hospitals to get treatment, which is located far away, so we face hardship in getting treatment."
Female diabetic patient, Bholabo union

A hypertensive patient could not get her blood pressure checked during the lockdown due to the inaccessibility of such services in the local community, but continued taking medicine from the pharmacy, which remained open.

Such was the case for a female COPD patient in Bholabo union who, during the lockdown, could not travel to district or urban facilities to consult doctors. In the absence of their specific medicine at the UH&FWC and a local COPD medical centre, patients like her were untreated during the lockdown period.

Before the lockdown, a female diabetes patient from Pubergaon village would travel once a month to a Diabetic Hospital (in Dhaka) to seek care she perceived as high quality. But during the lockdown, this was not possible. Transport within the community was challenging as well. As reported by a group of female TB patients in Rupganj, it was difficult to travel to the brac office every 15 days to collect medicine, as it was located far away.

"I have faced problems in consulting with a gynaecologist, due to transportation problems."
Pregnant women, Bholabo union

During the lockdown, barricades and police check posts made it difficult for patients to travel to health facilities. A male hypertensive patient in DNCC was unable to get treatment from the hospital, as his vehicle was stopped during the lockdown. Whereas a mother of a 5-year-old child in DNCC was stopped at the roadblock, but after explaining her child's sickness could proceed to the hospital. Another mother from the same neighbourhood reported a similar

incident. In addition, she received additional support from the guards at the check posts; they took her to the hospital and back to the slum afterwards.

Fear of COVID-19

There prevailed an overall fear of contracting COVID-19 amongst the community members. Due to this fear, people chose not to seek healthcare when the lockdown was imposed. Three female hypertensive patients in Pubergaon village, with physical complications relating to old age and the usual cold and cough, refrained from seeking healthcare out of fear.

Fear was also high among pregnant women and mothers of newborn children. Women who were pregnant during the lockdown period had heard from community members that the immune system of pregnant women is weak, so they are more likely to contract COVID-19.

> *"After the lockdown was enforced, we (pregnant women) were terrified because we had heard from community members that pregnant women have weak immunity and so can get COVID-19 more easily. So, out of fear, we did not leave the house."*
> *Mothers of newborn children, Bholabo union*

The fear also caused male TB patients in the Bholabo union to go into hiding when they were suffering from fever and cough, scared of being diagnosed with COVID-19, which can create social stigma. At that time, they temporarily could not seek healthcare.

The fear continued even after the lockdown was lifted for symptoms common for COVID-19. As reported by mothers of a newborn in Narayanganj, after the lockdown was lifted, patients suffering from fever, cold or diarrhoea were denied healthcare because they were suspected of having COVID-19. COPD patients sensed fear among healthcare providers when seeking treatment because shortness of breath was also a common symptom of COVID-19.

> *"The biggest problem was peoples' fears. People have started fearing the disease instead of fearing Allah, so they are unable to receive normal services."*
> *Male diabetic patient, Narayanganj*

Fear of contagion from health facilities

Many facilities, such as the Narayanganj 300 Bed Hospital and Rupganj UzHC, were declared COVID-19-dedicated. This meant they managed COVID-19 cases only, causing challenges for other service seekers. Those facilities which were not declared COVID-19-dedicated demanded 'COVID-19 negative certificates' for treatment of other ailments, which was another barrier for service seekers.

Fear of contagion from visiting hospitals and doctors was a common perception amongst healthcare seekers. This fear was more apparent amongst mothers of newborns and pregnant women so they chose to stay at home throughout the lockdown.

> *"I did not visit hospitals in fear of contracting COVID-19 from others present there."*
> *Female COPD patient Bholabo union*

Community clinics, pharmacies operated with little to limited capacity

In rural areas, community clinics and pharmacies usually do not conduct any tests or perform check-ups – whether it is for diabetes or blood pressure. Hence, patients must travel far to hospitals. Therefore, during the lockdown, rural patients were unable to get regular examinations. Pharmacies were accessed solely for purchasing medicine.

Out of fear, some pharmacies closed when the lockdown was imposed, resulting in patients being unable to purchase their medicine. In other parts, pharmacies remained open, so while patients could not go for routine check-ups, they continued consuming regular medicine throughout the lockdown.

A group of female hypertensive patients reportedly received neither free medication nor routine check-ups and blood pressure measurements from community clinics, so they would go to the pharmacies. After the country went into lockdown, they could not travel to the nearest hospital to seek these services. CCs and U&HFWCs were not providing any medicines, particularly those needed for diabetes, hypertension and COPD management.

Pregnant women in Pubergaon village complained that not all physical examinations are conducted regularly in the community clinic. This is due to the non-functioning weighing and pressure measuring machines, and the lack of glucose measuring and ultrasonogram machines. After the lockdown was lifted, health workers continued to provide service at the clinic from a distance and did not visit the homes of the pregnant women. With poor road conditions in the community, mothers found it risky and costly to travel to clinics. There were also increased transport fares due to the pandemic. They reportedly did not receive iron and calcium pills from the community clinic and sometimes found health workers to be absent when they went for check-ups. Mothers of newborns were unable to schedule appointments with doctors at private clinics, nor enter pharmacies, as personnel were absent.

> *"Everyone in the area goes to the community clinic or town to see the doctor, but at that time, everything was closed and even some doctors would not allow people to enter the pharmacy."*
>
> *Mothers of newborn children, Bholabo union*

The irregular supply of medicine at community clinics was a challenge for mothers of young children seeking healthcare. This led to purchasing medicine from expensive pharmacies. The behaviour of CHCP and the distance with which healthcare was provided was also perceived as a barrier by the mothers.

> *"The closure of the community clinic for three months due to the vacancy of the CHCP post, along with the closure of everything for 15-20 days during the lockdown was a major barrier for health seekers."*
>
> *Counsellor, Pubergaon village*

Medicine availability disrupted

In some cases, the supply of medicine was disrupted during the lockdown. Mothers of Pubergaon village could not purchase medicine at both CCs and pharmacies. Buying medicine from a pharmacy all the time was a financial burden. Mothers in Rupganj also found medicine to become expensive when the supply was limited.

In the Bholabo union, a female diabetic patient reported the pharmacy which she regularly purchased medicine from to shut down, as all the community members were suddenly living in fear when the lockdown was enforced.

The need to practice preventive principles of COVID-19

As a safety precaution from COVID-19, it was important for healthcare providers and seekers to both maintain social distancing, along with other health guidelines. However, patients raised social distancing measures taken by healthcare providers as a barrier to healthcare. A mother in Rupganj was alarmed when doctors did not want to come near her sick child at the health complex. Two mothers at Bholabo union, both with newborn children, wanted to go to the doctor during the lockdown and eventually got consulted from a distance which upset them.

After the lockdown was lifted, patients with diabetes from Pubergaon village reported visiting the doctor where consultations with him were from a distance. According to them, the doctor prescribed medicine without fully listening to all their problems, and they considered that to be the reason for an incomplete recovery after consuming the prescribed medicine. Mothers of newborn children, who were pregnant at the time the lockdown was lifted, went to seek healthcare at the facilities. As reported by a few mothers, they did not get any check-up from the doctor, but rather the health worker's sister because the doctor would not allow them to enter their chamber at that time.

Along with social distancing, wearing a mask was mandatory when seeking medical attention. For COPD patients, wearing a mask during visits to the doctor was problematic; it caused further breathing difficulties and, in many cases, chest pain. These, along with the doctors refraining from coming too close to the patients, were perceived as obstacles to seeking proper healthcare.

"The doctor prescribed medicine after hearing only a few problems, as a result of which we did not recover completely after taking that medicine."
Female diabetes patients, Pubergaon village

Telemedicine

Mothers of newborn children in Rupganj believed they were unsuccessful in reaping the full benefits of seeking healthcare safely from their homes using technology. Through telemedicine, mothers were able to receive health services using the internet, mobile application, or just a phone call from healthcare providers. In their perception, they were unable to explain their concerns properly over the phone, simply because they were unhabituated to seeking healthcare using this medium. "The direct face-communication gap creates a barrier for the patient to freely speak her mind (Rahman et al., 2020)."

Lack of adaptability

A pregnant woman and/or her family's misconception that frequent ANC check-ups are not essential. Hence, the incomplete number of ANC check-ups during the pandemic did not cause concern to the rural mothers.

"We had no problem during child delivery or the postnatal periods. We are rural people; we have such type of problems. Urban women have more problems."

Mothers of newborn, Pubergaon village

Healthcare unavailability

According to patients suffering from hypertension in Naryanganj, service provision was stagnant and ineffective in the hospitals. Similarly, mothers of newborn children and pregnant women could not avail free public healthcare during the lockdown. Private treatment was an expensive alternative, but doctors in many private clinics refused to schedule appointments during this period.

"I could not meet doctors during the lockdown. The doctors did not go to the chamber. So, I couldn't do my ANC check-ups during that period."
Mother of newborn, Narayanganj

"I missed two doses of vaccine for my one-month baby during the lockdown. I got frightened. Vaccine centres were closed. I checked the centres many times. Even now, they are closed."
Mother of newborn, Narayanganj

9 Findings and Discussion: Coping

Key Points

Coping strategies adopted by healthcare providers

- Courage and professional obligation to provide service during a pandemic in the absence of sufficient quantity and quality of PPE, health workers purchased their own PPE, reused PPE and in some cases even made their own
- To overcome transportation challenges, they paid for higher fares from their own pocket, used bikes and ambulances for traveling to work and avoided home visits to those living far
- Create awareness among the community regarding the necessity of home quarantine for COVID-19 patients and the importance of vaccination for those who dropped out fearing contagion of COVID-19.
- To avoid and delay supply disruption of medicine, health workers monitored and rationed the supply and provided alternative choices
- Some health workers had to reduce family expenditures to pay for the higher transport fares they incurred during lockdown when traveling was a challenge. They also took up initiatives to financially support patients
- To cope with changing demands, healthcare providers took on additional roles and CC remained open longer to continue providing health care, health workers provided consultation through telemedicine using personal mobile phones and facility emergency numbers. They also learnt new skills online
- To contain the spread of COVID-19, health workers enforced preventive principles of COVID-19 by requesting patients to queue up, building glass walls to act as a barrier between patient and provider.

Coping strategies adopted by healthcare seekers

- A typical response to fearing contagion of COVID-19 at health facilities, facing travel restrictions, living on limited or no income, was deferring treatment or seeking healthcare
- Unable to seek care for recurring health problems (such as an increase in diabetes) patients typically followed previous prescriptions, used learnings from previous experiences and took the advice of local drug sellers
- Patients suffering from financial constraints resorted to borrowing money, taking loan to finance treatment and medicine. Another alternative was reducing costs by conducting one test instead of multiple.
- To continue seeking healthcare during the pandemic, patients opted for ways to monitor health at home, visit pharmacies instead of health facilities or switch to more accessible health care providers.
- To avoid the depletion of medicine or to delay the process, patients stocked up on medicine at home
- Being unable to physically visit health facilities/ health care providers, patients opted for teleconsultation with providers in the community and outside.
- To avoid requiring health care, people took extra precaution in maintaining good health

9.1 Coping Strategies of Service Providers

Service providers' internal motivation of serving people as a professional obligation and their prevailing credibility in the community came together in coping with the barriers in service

delivery. Service providers reported the continuity of service provision through mobile phones during the lockdown period. Brac sebikas, for example, continued DOTS follow-up through mobiles. FWVs, CHCP and physicians also mentioned counselling and advising through mobiles.

Notwithstanding the extra, higher fare, service providers continued to attend facilities to provide services. One CHCP mentioned that she compromised her family budget to manage the extra transportation cost. In one CC, the CHCP worked extra hours to manage the extra patient load. In another CC, the HA worked overtime as the CHCP lived far away and could not attend the clinic. Fearing shortage of medicine at CC, the service provider would ration medicine to serve more patients.

Various steps were taken to maintain COVID-19 preventive health regulations during the lockdown (26th March to 30th May 2020). As schools were spacious and remained closed during the pandemic, EPI sessions were arranged there instead of at community peoples' homes. Service providers maintained a safe distance from service seekers. Some even installed glass barriers. CCs and UH&FWCs provided service through windows. Patients maintained a queue. Pharmacies and drug sellers served behind the locked front gate. Service providers wore masks, sanitised hands frequently, and promoted these practices to the community. Initially, service providers procured masks, PPE and sanitisers at their own expense.

To manage the supply chain, brac sent TB medicines via a messenger up to the point of the barricade, from where some Sebikas collected the medicines and then redistributed them among the patients. One Sebika described receiving medicine that changed multiple hands in order to reach her. In a similar manner, FWAs continued to provide contraceptive supplies. ~~by providing to someone else and requesting to collect by the concerned~~

Pharmacists stopped providing services that required close contact with the patient during the early stage of the lockdown. This included checking blood pressure, dressing wounds, administering injections and insulin and inserting cannula on hands. As fear subsided over time, these services resumed, apart from one drug seller who still does not check the blood pressure of patients. Since the pandemic started, demand for medicine dropped initially, other than for sanitary napkins, as people stayed home. Gradually, though, demand increased and supply was temporarily a challenge.

During the lockdown, village doctors either avoided visiting patients at home, due to fear of contagion, or if patients lived too far. For one village doctor, the number of patients increased during the lockdown in the absence of other service providers, but it later reduced as the lockdown was lifted and other healthcare providers resumed services. They had to purchase their own masks, gloves and cloth aprons.

As home visits were restricted, field workers shifted their focus to CC by working longer hours and extra days. After the lockdown, when travel restrictions were lifted, home visits remained a challenge as community members still feared the spread of COVID-19 into their homes. Field workers had to explain their safety protocols repeatedly so that they could continue providing door-to-door health services.

The following key challenges and coping strategies displayed by service providers, summarized below, were: courage and professional obligation, using out of pocket expenditure to purchase PPE or pay for higher transport fares Increasing knowledge and awareness, monitoring and rationing the supply of medicine, reducing family expenditures and financially supporting patients, adapting to the higher than normal workload, providing service through telemedicine, enforcing preventive principles of COVID-19. x

Challenge: Service provision during a pandemic
Coping Strategy: Courage and professional obligation

Service providers' motivation of serving people as a professional obligation and credibility in the community helped them to cope with the challenges of the pandemic. As reported by an RMO at Narayanganj District Hospital, the courage, sincerity and dedication to continue providing healthcare amidst a pandemic was an important coping strategy that worked among health providers.

Supporting one another at work was an indispensable coping mechanism for health workers. A midwife at the UzHC graciously provided mental support to her colleagues to help cope with COVID-19 challenges. With strong will, they successfully tackled all barriers to date. Another midwife reported maintaining her mental wellbeing by talking to her family on the phone regularly. Whether it was for facility rotational schedule, or to fill in for colleagues got COVID-19 infected and fell sick, health workers stepped up, worked longer hours and continued to provide service to patients, to the best of their abilities.

"We ignored the risks to our lives in order to provide services at the field level. We tried to provide services to our countrymen. We have done this from the liability and love towards this country. There were shortages of different things, irrespective of the crisis. I devoted myself to people's services during the COVID-19 pandemic. We tried to encourage others to stand beside the patients. We took the strategy to provide services to all helpless patients."
Medical Technologist, Narayanganj District Hospital

"When other doctors could not provide, I gave extra services; at the same time, when I was on the leave, then others supported at the hospital."
Medical Officer, private hospital

"I tried to maintain relationships with people. I called many people to make them feel better. I would suggest different foods to increase their immunity."
Drug seller, Rupganj

Challenge: Lack of PPE
Coping Strategy: Self-purchase of PPE

As an immediate response to the lack of PPE followed by the insufficient quantity and compromised quality, the healthcare providers decided to purchase PPE with their own money. Only later, the government provided these to all public sector health providers as reported by an FWV at U&FWC, Bholabo union. As mentioned by the civil surgeon and MO at Narayanganj District Hospital, for additional support, various sources provided PPE, including pharmaceutical companies, private industries, local member of Parliament's office, and elected representatives, who also provided financial assistance. The MO personally

reached out to a readymade garments factory owner who provided 100 sets of PPEs to the hospital. A large quantity of PPE and other healthcare equipment was also provided by the Zila Parishad to make up for the shortage. The Zila Parishad Chairman of Narayanganj reportedly shared responsibilities with non-governmental organisations to handle the situation and recruited many volunteers and made adequate donations.

In the private sector as well, it took time for healthcare providers to access PPE, and understand how to safely don and doff PPEs. In order to mitigate this situation, several different options were pursued. For instance, a physician at a private hospital in Rupganj learnt from watching videos online and got PPE and gloves made from fabric by a tailor. A paramedic of an NGO clinic in DNCC used reusable aprons. An MO at a private hospital initially only wore double- or even triple-masks at times, as it took 2 months for him to receive a PPE. Once PPE became readily available, health workers purchased them using their own money, which was more prevalent in the private sector than the public sector.

With the constant need and demand for PPE, there were shortages. A HA and private hospital nurse both reported reusing PPE by washing them every day with bleach or soap.

"The main problem with the service was the lack of healthcare equipment, which I bought out of my pocket."
Medical Officer, Private Clinic, Narayanganj

"I purchased the health protection materials with my own money. Will the government give this to us? For that, by making patchwork, we continue our service."
Village doctor, Bholabo union

Challenge: Transportation
Coping Strategy: Paid higher transportation costs, alternative transportation (bike, ambulance), home visits for nearby patients

Travel restrictions posed multifaceted challenges, yet health workers handled them in their best possible way with the end goal to serve the nation. A HA at Bholabo union paid for the high transportation fares from his salary to be able to perform his duty properly. Similarly, a lab technician at Rupganj bore the costs of using a bike to collect a COVID-19 tests sample.

During the lockdown, when public transportation was unavailable, nurses at Rupganj UzHC travelled by ambulance. With only one ambulance at the Rupganj UzHC, when more than one patient needed it, one of the patient's family was asked to arrange for their transportation, which was usually an autorickshaw. Otherwise, as reported by the UHFPO, she would try to arrange for an ambulance from a nearby hospital. Nurses at a private hospital in Narayanganj had to walk long distances to reach work.

With the police check posts in place, private practitioners both in Narayanganj and DNCC had to face police inquiry and, in some cases, reportedly harassment before showing identification to be permitted to continue travelling. According to the MO at a private hospital in Narayanganj, private practitioners had to give a lot of accountability to the police when travelling.

During the lockdown, healthcare providers including physicians, paramedics and laboratory technologist of the UPHC Clinic were provided with ambulances from the clinic to travel to the clinic and back home.

The challenges faced by transport restrictions were more severe in the rural areas compared to urban locations. The village doctor at Bholabo union would visit the homes of his patients if they lived within walking distance but could not provide this service to patients living far away. As the CHCP's house was too far away to visit the clinic during the lockdown, the HA from the Basunda CC had to allocate more time in the clinic.

"I faced special problems in coming to the hospital as a private practitioner. There has been a lot of accountability to the police that I had to go through."
Medical Officer, Private Hospital, Narayanganj

"After showing the clinic ID card and the health worker identity, I did not have to face any harassment at the check posts."
Paramedic, Smiling Sun Clinic, DNCC

Challenge: Inadequate knowledge of patients
Coping Strategy: Improve knowledge and create awareness about COVID-19 amongst patients

All public healthcare providers worked to increase knowledge and create awareness about COVID-19 to, COVID-19 patients, families of the patient and the community. For example, the Health Inspector (HI) at Rupganj UzHC provided COVID-19 training to the HAs. In turn, the HAs worked to raise awareness among the community the need for COVID-19 patients to home quarantine to contain the spread of the pandemic.

In addition to COVID-19, the medical technologist at Araihazar created awareness about the importance of completing their vaccination dose targeting those people who feared to take vaccine amidst the pandemic.

"I raised awareness and gave patients advice on COVID-19 to reduce people's fears."
Gynaecologist, Narayanganj District Hospital

Challenge: Limited supply of medicines
Coping Strategy: Monitoring and rationing the supply of medicine, providing alternative choices

To delay medicine stock-outs, a CHCP rationed the supply of medicines, by, for instance, giving 3 medicines instead of 10 to a patient visiting the community clinic. A village doctor in Pubergaon tried to manage a continuous supply of medicine, but at times of shortage, he also gave less medicine to patients.

Even though brac sebikas stocked up on medicine supplies before the lockdown, there was an unfortunate under-estimation, as they still faced shortages during the lockdown. Brac senior officials would then send medicine to replenish the stock. Given the various barricades enforcing the lockdown, transporting medicine became a challenge. Officers would come to the barricade with medicine and Sebikas would go to receive them. In the case of a remote village, the medicine would be relayed through multiple Sebikas. For similar reasons, brac sebikas delivered adequate medication once to avoid making multiple visits. To ensure continued intake of medicine without making home visits, the Sebikas would regularly call and remind the patients.

An FWA at Bholabo union reported advising women that since contraceptive injection could not be provided during the lockdown, they need to take oral pills as an alternative.

Challenge: Financial difficulties for health workers and patients
Coping strategy: Reducing family expenditures and financially supporting patients

The mobility challenges and, at times, expensive commuting brought about by the lockdown is well documented up until now. A CHCP had to cross the river every day to reach the clinic, which was a costly means of travel. To pay for her commute, she had to reduce her family's other expenses and hence travel to the clinic and serve the people in her community.

As the lockdown posed financial challenges for many service recipients, healthcare providers at times also provided financial support. For instance, a drug seller in DNCC lent as well as gave medicines for free to poor people and had to take a loan during the pandemic to meet his financial crisis.

Challenge: Higher than normal workload
Coping strategy: Changes in the working pattern

To overcome the manpower crisis at public sector health facilities, especially during the pandemic, nearly all health workers worked overtime to meet the service demand. An FWA kept the community clinic open longer hours than usual, since she was unable to manage a load of door-to-door services during the lockdown.

"I often had to work 1-2 hours overtime to see additional patients."
CHCP, Community Clinic

The scenario was different at the UH&FWC. As reported by the FPI at Bholabo union, people rarely visited the UH&FWCs for services during the pandemic, so the FWAs went door-to-door to raise awareness about COVID-19 and provided their services through SCs to increase the number of service recipients. Assured by an FWV at Charitaluk, Bholabo union, the rate of service delivery increased through SCs.

COVID-19 brought about changes in the working environment of health facilities. As mentioned by an FWA, previously, patients did not queue up, but now, amidst the pandemic and with the need for social distancing, they are required and willing to do so.

When HAs, also known as domiciliary workers, were not allowed to enter the homes of patients, they then provided the information from outside the homes, maintaining a social distance. Due to the lack of manpower in the community clinic, HAs worked overtime daily and on weekends to keep up with the patient influx. Even on Fridays, HAs would visit the homes with COVID-19 patients quarantining.

With nurses at Narayanganj District hospital getting infected by COVID-19, the remaining nurses had to provide additional duty. At Rupganj UzHC, to meet the workload pressure, the nurses worked together by dividing the duty among themselves for each shift.

As reported by the civil surgeon at Narayanganj District Hospital, service providers were given different tasks to cover staff shortage, such as a medical technologist being assigned to drive the ambulance.

"I have to work extra hours to cope with everything. Usually, office time is from 8:00 am to 2:30 pm. But I must attend the office every morning within 6:00 am and take out the EPI vaccine from the fridge and place it in a box with the correct temperature. Also, I monitor vaccination programs at the vaccination sites, after which I note down the returned vaccine in my notebook. After performing all duties, it would be 8:00 pm by the time I return home".
EPI Technologist, Rupganj UzHC

"Amidst all the challenges and limitations, we believe the services provided here are world-class. Due to our manpower crisis, and financial crisis perhaps we can't serve everyone, but those who receive services are treated very well."
DMCH Director

To cope with changing demands, healthcare providers took on additional roles. For instance, a drug seller in the DNCC agreed to visit patients who called him to check their diabetes and BP.

Challenge: Service continuity during a pandemic
Coping Strategy: Telemedicine, emergency numbers, online learning

Innovative measures were adapted to meet various service requirements. Both the Narayanganj District Hospital and Rupganj UzHC set up telemedicine services to continue providing health services amidst the pandemic to all patients, including both COVID-19 and non-COVID-19 patients. As patients were unable to visit hospitals physically, they utilised alternative methods to seek healthcare using technology. Emergency numbers were also in service. A physician in a private clinic in Narayanganj encouraged patients to seek medical care from home due to shortage of manpower at the facility.

Learning did not stop for midwives in Rupganj, who watched YouTube videos on their phones to gain more knowledge for their practice. Laboratory technologists at Rupganj UzHC came up with their own technique to preserve the COVID-19 test samples. Given that Viral Transport Medium (VTMs), used to preserve test samples, were scarce in Bangladesh, he prepared an artificial medium containing 4 barriers instead of 2 to transport samples from collection points up until reaching the test lab. To solve the confusion between an asthma patient and a COVID-19 infected patient, a physician at a private hospital would prescribe a chest x-ray. If a patient was found to have pneumonia, then s/he would be recognised as a COVID-19 patient.

"Services were provided via telecommunication."
Private practising physician, Rupganj upazila

Challenge: Contain the spread of COVID-19
Coping strategy: Enforce preventive principles of COVID-19

Amidst a pandemic where the COVID-19 virus spread via respiratory droplets of infected individuals, health guidelines ensuring the safety of both healthcare providers and seekers had to be followed.

Several physical measures were taken to ensure the safety of healthcare providers. A senior obstetrics consultant at Rupganj UzHC reported that as a safety measure, doctors provided services sitting behind glass walls made by the facility authority. Laboratory technologists at the same facility reported installing a glass barrier for their protection with their own cost. An

EPI technologist at Bandar upazila reported the need to deploy village police to maintain social distancing during the EPI programs.

For those providing healthcare in the absence of glass walls, maintaining social distancing was essential for their safety during the pandemic. A CHCP noticed that when she saw patients from a safe distance it left the patients unhappy. So, she would then have to explain the health risks to patients if a safe distance were not maintained after which they would understand. Similarly, a nurse at a private hospital in DNCC had the additional duty of explaining the reasons for safety to patients.

"We needed to explain the need to practise social distancing measures to patients, as they tended to get upset about it."
Physician, UPHC, Mirpur

Two nurses at Rupganj UzHC told researchers about a time when they were forced to lock the COVID-19 ward to prevent patients from roaming around outside and maintain isolation until their recovery. They also needed to stop attendants of the patients from entering the COVID-19 ward. For instance, while transporting a COVID-19 patient in an ambulance, both the patient and driver were given PPE. Also, a fever clinic was set up to deal with suspected COVID-19 patients, located in a separate room of the UzHC.

To avoid causing fear among the community, a HA would carry the PPE with him and only put it on when outside the COVID-19 patient's home.

"I requested them to wear masks even when they needed to speak. I also requested them to maintain social distancing protocols and use hand sanitiser before approaching me."
Medical Officer, Narayanganj District Hospital

"I had to treat patients following social distancing protocols, which upset many of them. One patient issued threats and told me that I should not even have a job if I could not touch patients."
CHCP, Basunda Community Clinic

A drug seller in Bholabo union, and another in Narayanganj district would clean the steel gate of the store, his hands, and services receivers' hands with hand sanitiser. Both drug sellers only served patients that would come to the pharmacy.

A village doctor at Pubergaon could only afford masks, gloves and reusable aprons for his protection. As these safety measures were not sufficient, he focused on boosting his immune system. So, he walked regularly, exercised, drank lemon water, and ate protein-rich food. A lab technologist at Smiling Sun Clinic also focused on developing his immune system and encouraged his patients to do the same.

A nurse at a private hospital expressed that she had to provide services to all patients, regardless of knowing if s/he had asthma or suffered from COVID-19, so she needed to take all safety measures when providing treatment.

"As it took time to differentiate between COVID-19 patients and asthma patients, we had to take risks when providing services. So, we wore all safety protection equipment when interacting with patients."

Nurse, private hospital

According to providers at the Smiling Sun Clinic, patients appearing to have a higher socioeconomic status would come to vaccinate their children carrying their sanitisers which they used to sanitise the chair before being seated. The providers considered this as correct behaviour when it was done out of fear of contagion but considered it otherwise when patients did this out of superiority.

Challenge: Making referrals during lockdown due to movement ban
Coping Strategy: Referrals

Referrals are an essential step to ensure the patient receives the required healthcare for recovery. As reported by a nurse at Rupganj, UzHC, when patients needed to be referred to Dhaka Medical College Hospital or other hospitals, they would provide a responsible person with the patient to provide guidance and help during admission at the referred hospital. At the Rupganj UzHC, all the patients requiring surgery and caesarean section were referred to DMCH and ICMH with the attendants, while at the Basunda CC, patients were sent to the Rupganj UzHC on an emergency basis. Brac sebikas in DNCC referred severe TB patients to Mohakhali or Suhrawardy hospital.

The village doctor in Bholabo union usually would refer patients to facilities as he can provide only essential services due to limited resources. But during the lockdown, he was unable to refer his patients anywhere so he would try to provide the necessary service within his means. If the patient suffered a serious illness then it became difficult to manage.

9.2 Coping Strategies of Service Seekers

Patients facing barriers to accessing healthcare during COVID-10 developed coping mechanisms for seeking care, either regularly or when required. Several options have emerged from the various obstacles that people have experienced while seeking healthcare. Pharmacies became even more popular whether it was to purchase medicine following old prescriptions, to use equipment such as nebulizers and glucometers, purchase medicine due to limited supply at the community clinic. Contacting health care providers over phone was also a widespread alternative. In fact, according to a recent study, contacting health providers via mobile telephone, and delegating relatives or neighbours to pick up medication for the patient, could be formalised during a lockdown to promote continuity of care during future crises (Nshimyiryo, A., et al. 2021).

For patients facing financial constraints due to loss of earnings during the lockdown, delaying treatment was the only choice unless they took financial assistance in the form of loan from friends and relatives. Otherwise, they sought care only when livelihood was restored after the lockdown was lifted.

Community leaders worked under the orders of the MoHFW and in collaboration with community members to ensure lockdown was maintained, and that relief was provided to the distressed. In Naryanganj, a leader provided PPE and other healthcare equipment in large numbers to make up for the shortage. The physician doctor of an upazila vice chairman arranged a weekly, free medical camp in the community to provide free healthcare services to poor people. The chairman herself provider her car to transport patients, in particular

pregnant women, to the hospital during the lockdown period, created awareness about COVID-19 health regulations, provided support with medicine, PPE and relief. Volunteer groups were set up with league activists and students to support healthcare provision.

Challenge: Fear of contagion, travel restrictions, limited or no income
Coping Strategy: Delayed treatment/healthcare

At the onset of the pandemic, followed by the lockdown, pregnant women could not have their regular consultations or ANC check-ups due to fear of contagion at health facilities, travel restrictions and unavailable healthcare. The brac health workers did not visit their homes, either. After the lockdown was lifted, health workers inquired from outside the homes of pregnant mothers. As reported by mothers from the Bholabo union, panic and fear subsided after the lockdown was lifted, so they were able to visit nearby doctors for a check-up. According to the FGD participants, they were unable to take ANC owing to COVID-19 but they did not have any problems as a result of this.

"During the initial stage of COVID period, all of us were in fear of COVID. Now, there is no problem to get treatment "
Pregnant woman, Bholabo union

“When we were pregnant during the lockdown, we did not get any ANC service for more than a month and a half during the lockdown.”
Mothers others of newborn, Bholabo union

Another reason for delaying healthcare was due to the loss in family earnings during the lockdown. In order to finance health care, patients chose to wait until their earnings were recovered. As reported by an RMG worker, only after the lockdown was lifted and earnings resumed after factories reopened were, they able to seek necessary treatment.

“I sought healthcare when my husband was able to drive his autorickshaw again and earn income after the lockdown was lifted. I was able to go for ANC check-ups.”
Pregnant woman, Bholabo union

Challenge: Seeking care for recurring health issues
Coping Strategy: Follow previous prescriptions, apply learnings from previous experience and follow the advice of local drug sellers

One of the popular coping strategies for rural dwellers seeking healthcare during the lockdown, was to take medicine following old prescriptions. Patients who took regular medicine for either diabetes, COPD or hypertension continued following prescriptions given by their doctors before the lockdown was enforced. A COPD patient in Rupganj relied on old prescriptions and the advice of the local drug seller. A diabetic patient reported that when his diabetes would increase, he followed the food habits and medicine that the doctor had earlier prescribed. Mothers of young children reported purchasing medicine for their sick children based on previous experience.

“We could not get treated properly because of barriers created during that period. Then we took medicine by following earlier suggestions and prescriptions of doctors.”
FGD, female diabetic patients, Bholabo union

"I collected medicine from the pharmacy and sometimes used medicine based on my own experiences."
Mothers of newborn children, Rupganj

Patients reported following old prescriptions for two reasons, namely, lack of affordability and transport. According to a group of COPD patients, as they could not afford hospital visits for regular check-ups, they chose to continue following the medicine the doctor had earlier prescribed. The lockdown restricted mobility, so as hospital visits were not possible, hypertension patients got their blood pressure checked at the local pharmacy in addition to following old prescriptions.

"Unable to go to the hospital due to the lockdown, they did a blood pressure check-up at a local pharmacy and took medication according to an old prescription. "
Female Hypertensive Patients, DNCC

Challenge: Financial constraints
Coping Strategy: Borrowed money/took loan/reduced costs

Patients with financial constraints and suffering from either increased diabetes level or hypertension sought medical attention by borrowing money from others to either see a doctor or purchase medicine. A pregnant mother whose family was in financial distress during her pregnancy did not go for multiple check-ups, but instead opted for only one right before delivery to keep costs minimal.

"When diabetes was very high and they got very sick, they borrowed money and went to the doctor for treatment."
FGD with diabetic patients, Pubergaon village

Urban dwellers suffering from both financial constraints and sickness resorted to taking loan from friends and family when they got severely ill and needed to conduct tests or purchase medicine. A hypertensive male patient pointed out that long-term treatment is difficult to maintain for poor people as it is costly so they take irregular treatment from local pharmacies when they are very ill.

"I borrowed money from relatives to go to the hospital when I became very ill during our financial crisis."
Male Diabetic patient, DNCC

Challenge: Seeking healthcare
Coping Strategy: Monitoring at home, visiting pharmacies or changing health care providers

As a result of the COVID-19 lockdown and restrictions, patients that needed health care sought alternative treatment. A female diabetic patient bought a glucose meter to monitor her diabetes from home. While a patient suffering from hypertension checked his blood pressure at his neighbour's home most of the time.

After the pandemic started, brac sebika no longer delivered TB medicine to the homes of TB patients. Instead, patients were required to travel to the brac office to collect medicine, which

was difficult for them, but they still went, regardless of the hardship they faced as treatment was important.

In the absence of ultrasonogram machine, iron and calcium tablets at the community clinic, pregnant women in Pubergaon village performed ultrasonograms at a private clinic and purchased medicine from the pharmacy. A pregnant woman reported receiving support from an FWA and HA who lived in her neighbourhood. Other pregnant women who could not seek professional healthcare followed the advice of senior family members. For instance, mothers of newborn infants in Pubergaon village followed the advice of their family members who believe that numerous ANC visits throughout a pregnancy are unnecessary.

Mothers of young children purchased medicine, including contraceptives from pharmacies as medicine at the community clinic was limited and felt the behaviour of the CHCP was unsatisfactory deterring them from visiting the clinic.

For urban slum-dwellers, pharmacies were a predominant source of healthcare. For instance, COPD patients went to pharmacies to use the nebulizer, diabetic patients got their glucose levels checked, and even mothers of sick children who first acquired medicine from pharmacies and then visited the hospital if the child remained unwell.

"When our children fall ill, we first provide medicine from the pharmacy, and if the child still isn't cured, then we take them to Shishu Hospital."
Mothers of children, DNCC

Pregnant women in DNCC received services from brac sebikas at nominal cost, providing them with financial relief. In addition, they received emotional support from their parents and healthcare advice from experienced mothers. Some patients had to make compromises in choosing the service provider. Instead of consulting doctors at UzHC, district hospital or private facilities, they turned to CCs, H&FWCs and pharmacies in the neighbourhood. To minimise cost, some turned to the government facilities, who would otherwise prefer consultations at private facilities.

Challenge: Medicine stock out/depletion
Coping Strategy: Stock up on medicine

Predicting that the pandemic would make it difficult to receive services or leave the house in the event of a lockdown, hypertensive patients in Rupganj and COPD patients in Pubergaon village purchased large quantities of medicine to minimize the possibility of a shortage.

"We bought more medicine than was prescribed before the lockdown and we took them when necessary."
Female COPD patients, Pubergaon village

Similarly, diabetic patients in Naryanganj bought enough medicine, insulin, and testing kits in advance. They had to pay an exorbitant price to ensure continued treatment during the lockdown and the foreseen uncertain period ahead.

Challenge: Unable to visit health facilities/ health care providers

Coping: Tele-consultation

The use and rise of telemedicine as an alternative healthcare option was widespread. Many used mobile phones to consult with their service providers. Community members also provided consultation over the mobile phone, including FWAs and HAs. A hypertensive patient in Pubergaon village received phone consultations from the village doctor. A pregnant woman in Rupganj contacted a private physician for tele-consultations when her first trimester complications began.

Mothers of newborn children at Rupganj received advice from UzHC doctors over the mobile phone during emergencies. As narrated by the mother of a newborn in Bholabo union, immediately after the COVID-19 lockdown was enforced and hospitals were closed, she feared she was pregnant as her menstruation had stopped. But with no facility to visit to conduct a pregnancy test, she contacted a CHCP over phone who instructed her on how to use a pregnancy test kit purchased from a pharmacy. After the lockdown lifted, the CHCP resumed her visits to the community clinic and the mother went there for her check-ups.

"I have the FWA's mobile number, so whenever I faced any physical complexities, I called her and got suggestions."
Pregnant women, Bholabo union

"Since the lockdown, we received help from the CHCP, who kept in touch with everyone on mobile and advised us to go to Upazila Health Complex in case of any emergency. Although the service was not that satisfactory, we made peace with it, as it was during a pandemic."
Mothers of newborn, Bholabo union

Two diabetic patients in Naryanganj contacted doctors they knew by phone when they experienced any health-related problems. The father of a newborn suffering from severe diarrhoea, who was denied healthcare at the facility (as diarrhoea was a symptom common in COVID-19), sought free healthcare from a doctor he found on Facebook.

"My husband got a hotline number of a doctor on Facebook. The doctor gave her free prescription after hearing my newborn was suffering from severe diarrhoea."
Mother of newborn, Naryanganj

Challenge: Avoid the need for the health care
Coping Strategy: Take extra precaution regarding health

All in all, to minimise the possibilities for seeking health care, people began taking extra precaution in maintaining good health. For instance, a hypertensive patient consciously avoided matters that could potentially cause physical or mental pressure for him.

"We refrained from doing things that could cause a cold, such as handling water."
Female COPD patients, Pubergaon village

Patients suffering from COPD always kept their inhalers in arm's reach in case their shortness of breath increased at any time, while patients suffering from diabetes adhered to their diet as much as possible. Similarly, patients with hypertension tried practising good food habits and home remedies to stay fit.

10 Conclusion and Recommendations

As in other countries, Bangladesh's health system was overwhelmed with the COVID-19 pandemic, and concentrated its focus on prevention and response, including testing, contact tracing, and vaccination together with treatment. A high priority focus on the pandemic affected other routine and regular activities of the health services, including EHNS. As the pandemic has continued for more than a year, and is likely to continue for years to come, a review of the effects on EHNS is required to improve understanding and ensure that measures can be taken to minimise adverse impacts.

Consistent with the findings of numerous studies globally, this study also found adverse effects of the lockdown on selected EHNS (RMNCAH, TB and NCDs) in both selected urban and rural settings. Specifically, lockdowns which imposed restrictions in mobility, affected both service providers and service seekers. Non-public sector service providers, particularly private sector providers, were greatly affected than those in the public sector, as the latter had guaranteed income and other support. The joint fear of being infected, supply side restrictions of maintaining safe distance and avoidance of physical contact/touch, and the stigma attached to infected people meant that service seeking was also affected. As a result, utilisation of all the services–contraceptive, ANC, institutional delivery, PNC, immunisation, child diarrhoea and pneumonia care, adolescent healthcare, TB case detection, diabetes, hypertension, and COPD care uptake–reduced significantly during the lockdown period. The effects were felt more in rural settings than urban ones, as in the latter, there are more options for service provisions. Women were found to be more affected than men, due to restrictions in mobility and a general lack of economic power. The effects were felt more during the early part and lockdown period than later, when the infection rate was rising, but service utilisation was recovering. Nonetheless, the coverage in 2020 remained below 2019 coverage levels.

Challenges faced by the service providers included fear of being infected and implications over family; lack/limited/improvised PPE and other sanitary measures in the beginning of pandemic; transport unavailability and high cost in attending workplaces; harassments from law enforcing agencies while commuting to workplaces; hostile neighbourhoods; unwelcoming attitude of house owners toward field workers regarding home visitation and holding SCs and EPI outreach sessions; non-compliance of service seekers with COVID-19 health regulations, particularly wearing masks and maintaining distance; shortage of service providers; and service providers engaged with other assignments than what they were supposed to be engaged with. Service providers coped through commitment to professional obligation; securing PPE on their own initiative and at their own cost; communicating over mobile phones; supplying contraceptives to the neighbourhood of any designated person; holding SCs and EPI outreach in closed schools; adjustment in family expenses to accommodate extra transportation cost; counselling service seekers for health regulations of COVID-19; and working extra hours.

Service seekers' challenges were fear of being infected with associated stigma and home lockdown; crowded health facilities were a source of COVID-19 infections; non-availability of transport and high fares of available transport; blockades on commuting routes; non-availability of preferred service providers; loss of income; service provision with no physical

examination and while maintaining distance; and non-availability of NCDs medicines at community clinics and union level facilities. Coping strategies of service seekers included deferring service seeking; switching service providers; communicating through mobile phones; following old prescriptions; and incurring extra cost met through borrowing.

Based on the study findings, the recommendations outlined below are proposed as options for the demand-side adaptation of key measures, and supply-side responses and initiatives, which may be relevant for EHNS policy-making, and equally relevant for the World Bank operations in near future.

10.1 Options for the demand-side adaptation of key measures

1. As measures like lock-down basically isolate the communities, they need to have their own means to cope in future. Findings revealed that people had to rely upon the local service providers like village doctors, druggists, CC and union facilities though they were habituated in seeking care from better facilities and service providers. Hence formation of area-based local health support groups with responsibility for supporting promotive, preventive, curative, rehabilitative and palliative care is proposed. In rural areas, these may be para or village based. Urban areas may be mohollah-, or slum-based. The groups may be composed of interested leaders (both elected and informal), health workers and with proper representation of all segments of community, sex, socio-economic class, etc. MOHFW may facilitate the formation and grooming of these groups by seeking support from NGOs, CBOs and the private sector. The groups may be comprised of volunteers, who may be trained and supported to carry out required promotive, preventive, curative, rehabilitative and palliative care within the designated area. The volunteers should include representation from different segments of the community, to the extent possible.

   Promotive volunteers could be trained to promote healthy behaviours for combating COVID-19, other infectious diseases, small family norm, RMNCAH, TB case detection, and healthy lifestyles for combating NCDs.

   Preventive volunteers could engage in preventive activities like enforcing compliance of health regulation for combating COVID-19 and other communicable diseases, contraceptive use, ANC, safe delivery, PNC, newborn care, infant and young child feeding with breastfeeding, immunisation uptake, integrated childhood illness, community/home management, and adolescent health (including menstrual hygiene management etc).

   Curative volunteers could be encouraged to form disease/issue-specific support groups in areas such as TB, diabetes, hypertension, COPD, or pregnant, mothers etc. for mutual support to ensure required curative/screening care by each concerned. They also may link with the respective government, NGOs and private facilities to secure curative/screening care by concerned.

   Similarly, *rehabilitative and palliative care volunteers* could work to ensure that care is provided to persons in the community who need it. This could involve working with local government institutions and local administration to ensure that care is provided to service seekers.

10.2 Supply-side responses and initiatives

1. MOHFW needs to proactively take initiative for the formation and functioning of area-based local health support groups. NGOs, CBOs and the private sector may also be engaged for the same.
2. Equip each disease/thematic health program (e.g., MCH, TB, NCD) to address EHNS in pandemics with inter-sectoral and private sector collaborations.
   a. e.g., enhance the widespread use of tele-medicine at UzHC and/or other hospitals like district/medical college and m-health programs by all categories of government and non-government providers as sustainable outpatient models on a regular basis to reduce hassles of travel and queue[30] [31].
3. MOHFW's health system needs to address all the known problems from which it has been suffering and once again surface during the pandemic.
   - *Human resources*: All the field positions need to fill-in. All the facilities need to staff with the proper number and skill-mixed human resources. CHCP's position may be replaced with qualified SACMO to offer proper care, particularly of NCDs. SACMO positions at UH&FWC need to fill in to enable offering of NCD services. All technologists including the laboratory need to fill in as vacancy found to limit other services as the lone was engaged in COVID-19 response. UzHC, district and medical college hospitals also need to be properly staffed, both in number and skill-mix as situation like COVID-19 pandemic demand revision of current staffing as facilities had been supported with extra human resources. Proper career progression for all categories of health human resources can make them properly motivated to serve adequately as mentioned by many participants of this study like FWA, FPI, FWV, CHCP etc..
   - *Medical equipment:* Facilities at all levels need to supply with properly functioning equipment with the provision of repairs by the local authorities.CC not having functioning BP machine lost confidence pf community As revealed by the crisis of managing COVID-19 cases, central oxygen supply needs to ensure at all hospitals including UzHC to be able to proper manage other cases like prolonged labour.
   - *Medicine:* Supporting in proper forecasting of required medicines with adequate supply of appropriate medicines at all levels. CC and UH&FWC need to be supplied with NCD medicines. Supply-chain needs to maintain if required through support from the law enforcing agencies, as supplies are essential for service provisions

4. All the government health workers need to be trained (basic and then periodical refresher) on IPC procedures and supplied regularly with proper logistics (PPE, sanitisers etc.) to enforce the practice of IPC.

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[30] https://grameen.technology/post/32/portable-health-clinic
[31] https://www.tbsnews.net/companies/digital-healthcare-hands-usaid-provide-health-services-marginalised-community-202252

5. MOHFW together with DGHS and DGFP need to be proactively guiding its health workers, particularly field workers so that they properly continue their services in case of any emergency such as a lockdown or the COVID-19 pandemic. Engagement of health domiciliary workers (HA/AHI/HI) for lockdown/isolation/quarantine enforcement neglecting their usual services is a classic example of the absence of guidelines from headquarters as they couldn't resist local pressure.

6. An appropriate communication strategy needs to be developed with aggressive implementation using multiple channels to improve awareness among the population, and limit panic. MOHFW needs to coordinate with the Ministry of Information who controls the media (both of government and non-government and also print and electronic) for effective implementation.

7. MOHFW's ability to harness the potential of the non-government sector needs to be strengthened through strengthening stewardship and regulatory roles so that it can capitalise on the vast resources of the non-government sector in a planned manner as needed. Stopping operation of many private sector and NGO facilities in the early part of pandemic and lockdown is a regulatory failure of MOHFW which licensed those for operation. Also in the face of human resource crisis in its facilities, MOHFW could seek support from the private and NGO providers through its stewardship roles.

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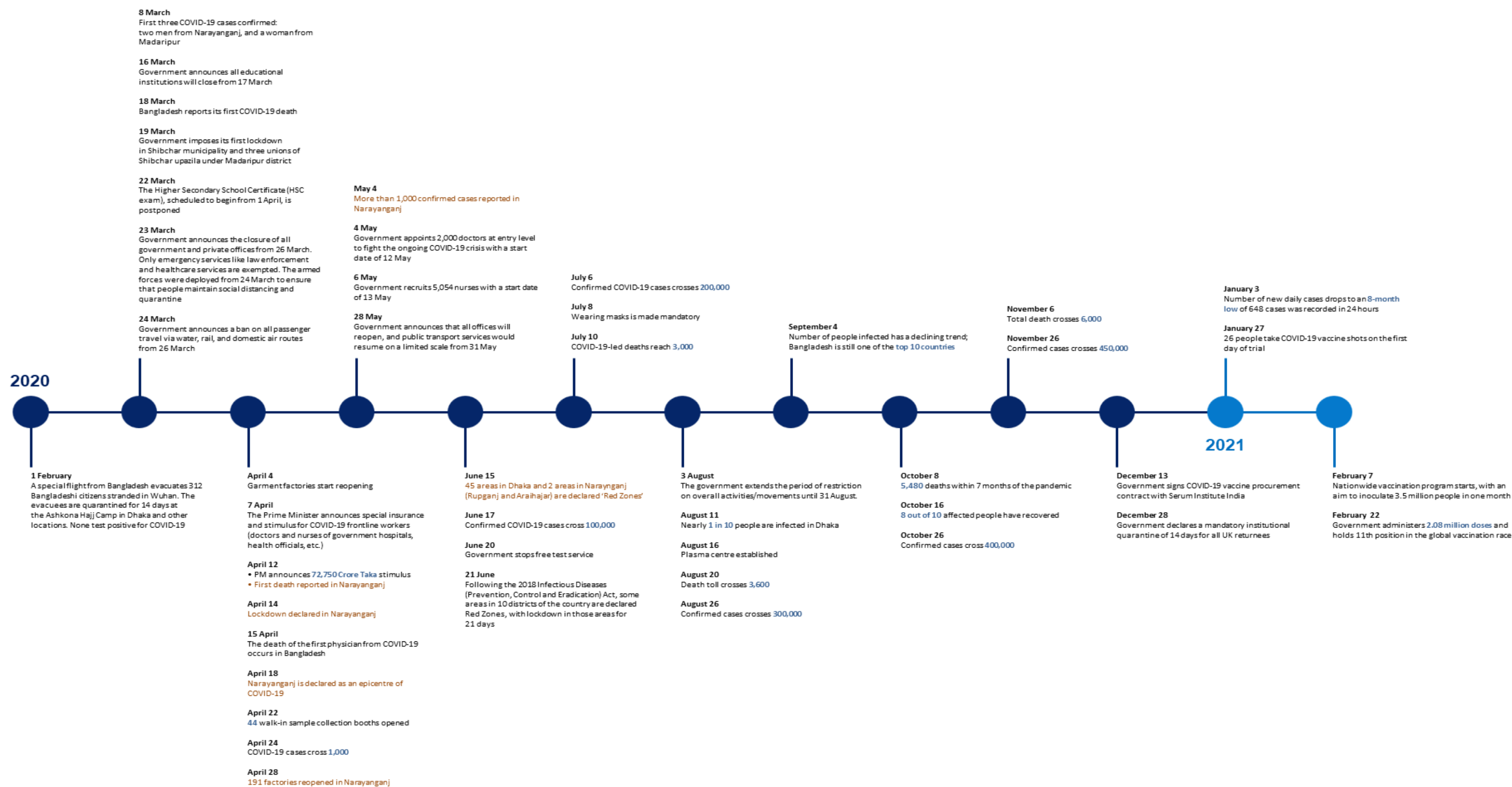
Annex A: Timeline of COVID-19 Key Events in Narayanganj and Bangladesh



Annex B: Working Definition of Themes

Service Provision

Service provision indicates what services were available, what type of facilities were functional and what type of providers were available. Here, the intent is to check:

1. was there any disruption to services for RMNCAH/TB and NCD care during the pandemic?
2. what could be the reasons and
3. best practices/examples.

Service disruptions could be due to overload of COVID patients and other supply-side factors (e.g., staff tasked for COVID care, governance reasons, managerial inefficiency, lack of funding and so on).

Services provided by different service providers

Different service providers are involved in providing different types of services. Not all services providers provide all 8 types/sub-types of services.

- Explore status of service provisions delivered by the respective service providers and facilities during 4 phases of the period: (1) pre-Covid, (2) early period of Covid, when lockdowns, travel restriction, travel restrictions, closure of workplaces, markets imposed, (3) middle part of Covid period, when all restrictions were gradually lifted, (4) existing part of Covid period when all most everything are operating as usual for RMNCAH, TB and NCD care
- Explore the changes in service provisions in the various COVID-19 phases for RMNCAH/TB/NCD care compared to the earlier normal situations? What changes were observed? [probe: availability of services; availability of staff, availability of drugs, availability of equipment and supplies and availability of infrastructure] What drove the change in service delivery status?
- How did this change in service provision affect utilisation of RMNCAH, NCD and TB care? Was there any specific potential impact that you would think of these changes in service availability could fetch for RMNCAH, TB and NCD health of people in your catchment area?
- Identify the reasons/determinants of changes during the same 4 phases of period in service provisions, which may be of 2 nature: (1) internal/self like fear of getting infected, (2) external like inhibition of family, neighbours; stigma; hostility from neighbours; travel related – unavailability of transport, increase price of transport; support in work-place – colleagues, supplies; protective arrangements – masks, gloves, PPE, sanitizers, hand-washing facilities
- How did you specifically deal with emergency obstetric care and delivery? Did you refer the pregnant women to another place? Where and how? Why did you refer? How was the referral arrangements and transportation at your facility? – gynaecologist/obstetrician – 3 facilities, upazila all
- What are some of the best practices/examples that you or your facility have adopted to improve service availability? All SP

- How was the support from the community functionaries (e.g., community clinics and providers) to improve service availability? Was it adequate? Could it help with reducing your patient load? Can you please share an example from your experience? All SP
- How were the referral arrangements from the communities to your facility? Was it timely and adequate? All SP
- How was the support from private providers and informal providers for improving service availability? Was it adequate? Can you please share an example from your experience? All SP
- How was the support of the NGOs to improve service availability in your catchment area? All SP
- What are some of the lessons that you or your facility have learned with respect to service availability during the pandemic? What are your suggestions for improving service availability in future pandemic/emergency? All SP

Coverage

Coverage means what type of services were used by a specific category of recipient against their need (e.g., family planning). Utilisation indicates what type of services, facilities and providers were used by each category. **Services able to deliver against targets**. Some providers like HA for child/female vaccination, FWA for contraceptive users, FWV for ANC/PNC against pregnant lists will be able to inform about the level of coverage – same, decrease, increase. For other service providers it will be amount of services delivered or service recipients served.

1. Where did you go for treatment (which type of provider and facility)? Why did you choose his specific provider? SR
2. Did you delay or forgo any treatment? If so, why [fear, not felt care was relevant, family members did not give permission, financial constraints, lack of service availability, shut down of facilities/pharmacy, lack of transportation, lack of trust on provider and so on). SR
3. Did the delay/neglect have any impact on your health? Please explain the complications, co-morbidities or other issues that you have experienced. What did you do with the health complications [probe: any care received]? SR
4. If you have received care, how did you manage to avail care timely? What were the coping mechanism/arrangements you have adopted? Who supported you [self-action, family member, neighbor, community provider, informal provider, community leader and so on]? SR
5. Did you get any support from the community health providers (or any other provider/agency/NGO)? If so, explain and how did it help you? Would you like to avail such supporting mechanisms in future during a pandemic/emergency? SR
   What are your suggestions for improving the availability and usage of services during a future pandemic/emergency in your community? What can be done better so that women and children (or tb patients or diabetic patients) can avail batter care timely? Both SR and SP

- Explore effects of coverage for the respective service providers during 4 phases of the period: (1) pre-Covid, (2) early period of Covid, when lockdowns, travel restriction, travel restrictions, closure of workplaces, markets imposed, (3) middle part of Covid

period, when all restrictions were gradually lifted, (4) existing part of Covid period when all most everything are operating as usual.

- Identify the reasons/determinants of changes during the same 4 periods in coverage, which may be:
  - internal/self-fear of getting infected
  - external inhibition of family and neighbours
  - stigma
  - hostility from neighbours
  - travel-related, e.g. unavailability of transport, increase price of transport
  - support in the workplace such as colleagues and supplies
  - protective arrangements such as masks, gloves, PPE, sanitizers, hand-washing facilities and
  - in-and-out migration effects.

Utilisation

Services utilised by the service recipients for the identified services.

- Explore effects of service utilisation by the respective service recipients during 4 phases of the period: (1) pre-Covid, (2) early period of Covid, when lockdowns, travel restriction, travel restrictions, closure of workplaces, markets imposed, (3) middle part of Covid period, when all restrictions were gradually lifted, (4) existing part of Covid period when all most everything are operating as usual.
- Identify the reasons/determinants of changes during the same 4 periods in service utilisation, which may be of 2 nature: (1) internal/self like fear of getting infected, (2) external like inhibition of family, neighbours; stigma; hostility from neighbours; travel related – unavailability of transport, increase price of transport; support from service providers – facility closes, limited hours, queue, requirements of wearing masks etc., Covid test report etc

Continuum of care

Certain care need continuity for its effectiveness. Such as, immunisation doses must be completed, ANC must be in required number, certain contraceptives need to be used regularly, DOTS must be taken regularly etc. Continuum of care will be explored both from service providers (for their respective services) and service recipients (for their respective services).

- Explore continuum of care by the respective service providers and service recipients during 4 phases of the period: (1) pre-Covid, (2) early period of Covid, when lockdowns, travel restriction, travel restrictions, closure of workplaces, markets imposed, (3) middle part of Covid period, when all restrictions were gradually lifted, (4) existing part of Covid period when all most everything are operating as usual.
- Identify the reasons/determinants of changes for both service providers and service recipients during the same 4 periods in continuity of care which may be of 2 nature: (1) internal/self like fear of getting infected, (2) external like inhibition of family, neighbours; stigma; hostility from neighbours; travel related – unavailability of transport, increase

price of transport; support from service providers – facility closes, limited hours, queue, requirements of wearing masks etc., Covid test report, in and out migration, etc.

To facility and community providers – SP

- Was there any specific potential impact that you would think of these changes in continuum of care could fetch for RMNCAH, TB and NCD health of people in your catchment area? All SP
- What are some of the best practices/examples that you or your facility have adopted to improve continuum of care?
- What are some of the lessons that you or your facility have learned with respect to continuum of care during the pandemic? What are your suggestions for improving continuum of care in future pandemic/emergency?

To community members - SR

1. Did the discontinuity in care have any impact on your health? Please explain the complications, co-morbidities or other issues that you have experienced. What did you do with the health complications [probe: any care received]?
2. Did you get any support from the community health providers (or any other provider/agency/NGO)? If so, please explain and how did it help you? Would you like to avail such support supporting mechanism in future during a pandemic/emergency?

What are your suggestions for improving the availability and continuum of care during a pandemic/emergency in your community?

Quality of care

Quality of care comprises technical quality (to be responded by the respective service provider) and perceived quality (to be responded by the respective service recipient).

- Explore impression on quality of care by the respective service providers (may remain unchanged or changed) and respective service recipients (may feel changed or unchanged) during 4 phases of the period: (1) pre-Covid, (2) early period of Covid, when lockdowns, travel restriction, travel restrictions, closure of workplaces, markets imposed, (3) middle part of Covid period, when all restrictions were gradually lifted, (4) existing part of Covid period when all most everything are operating as usual.
- Identify the reasons/determinants that have changed or unchanged the quality of care for both service providers and service recipients during the same 4 periods in quality of care, which may be for service providers: more cautious of infection prevention, lack of colleagues/support staff, shortage of supplies – medicine, reagent, vaccines, contraceptive, other medical surgical requisites, PPE and sanitation arrangement; for service recipient: lack of empathetic touch from service providers, limited personal attention by the service provider due to workload, limited working hours, shortage of medicine, reagent, contraceptives etc.,
- How did this change in quality-of-care affect utilisation of RMNCAH, NCD and TB care? Was there any specific potential impact that you would think of these changes in quality of care could fetch for RMNCAH, TB and NCD health in your catchment area? SP
- What are some of the best practices/examples that you or your facility have adopted to improve quality of care? SP

- What are some of the lessons that you or your facility have learned with respect to quality of care in this pandemic? What are your suggestions for improving quality of care in future pandemic/emergency? SP

Reporting

Some service providers and facility managers are responsible for preparing and sending regular report. Such as, HAs report on immunisation while FWAs report on contraceptive use, CHCP report on CC activities, FWV/SACMO report on UH&FWC activities, UH&FPO, superintendent district hospital, director DMCH report on their facilities.

- Explore experience of reporting by the respective service providers during 4 phases of the period: (1) pre-Covid, (2) early period of Covid, when lockdowns, travel restriction, travel restrictions, closure of workplaces, markets imposed, (3) middle part of Covid period, when all restrictions were gradually lifted, (4) existing part of Covid period when all most everything are operating as usual.
- If there was a disruption in data reporting, how long was it for? How is it now? Did you or your facility adopt measures to improve reporting? Please explain, how?
- Identify the reasons/determinants that have changed or unchanged the frequency and content of reporting during the same 4 periods, which may include: facility closures, travel and transport restrictions, non-receipt of report from others.

Barriers

Barriers are the obstacles faced by service providers in providing services which affected the service provision, coverage, continuum of care, quality of care and reporting. For service recipients, barriers are faced for utilisation which has affected continuum of care and quality of care also. To be collected from both service providers and service recipients.

Possible barriers for service providers will be obtained from responses for service provision, coverage, continuum of care, quality of care and reporting data. Possible barriers for service recipients will be obtained from utilisation, continuum of care and quality of care.

Coping

Coping includes the approaches adapted by service providers and service recipients in overcoming the barriers they faced. To be collected from both service providers and service recipient.

Annex C: List of Key Informant Interviews

1. Line Director, MNCAH, DGHS
2. Line Director, MIS, DGHS
3. Director, Mycobacterial Diseases Control, DGHS
4. Line Director, Non-communicable Diseases Control, DGHS
5. Line Director, National Nutrition Services, DGHS
6. Line Director, Community-based Healthcare, DGHS
7. Director, MCH-Services, DGFP
8. Director, MIS, DGFP
9. Deputy Project Director, Urban Primary Healthcare Service Delivery Project
10. Chief Operating Officer, Smiling Sun Network
11. Secretary General, Bangladesh Chemists and Drug Seller Samity
12. Organizing Secretary, Bangladesh Private Clinic Diagnostic Owners Association
13. Secretary General, Bangladesh Medical Association
14. Member, National Technical Advisory Committee for COVID-19
15. Member, DGHS COVID-19 Coordination Committee
16. Convener, National Health Rights Movement
17. Ex-Vice Chancellor, Bangabandhu Sheikh Mujib Medical University and Ex-President, BMA
18. Adviser, Institute of Epidemiology, Disease Control and Reserch
19. Professor, Institute of Health Economics, University of Dhaka
20. Professor, Department of Economics, University of Dhaka
21. Professor, Department of Public Health, North South University
22. Senior Health Specialist, World Bank, Dhaka
23. Programme Management Specialist, HPNE Team, USAID, Dhaka
24. Health and Population Adviser, FCDO, Dhaka
25. Health Adviser, Global Affairs Canada, Dhaka