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# EXPLORING HEALTHCARE LANDSCAPE IN URBAN BANGLADESH: **FINDINGS FROM HEALTH FACILITY MAPPING OF DINAJPUR MUNICIPALITY IN BANGLADESH**

UKaid from the British people
PHD Partners in Health and Development
Options
HISPINDIA
UHSSP A project of the MOHFW funded by UK government

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**ISBN:** 978-984-551-383-8

**Scientific report No.** 143

April 2021

**Cover and Layout design**
Mohammad Inamul Shahriar

**Published by**
Health Systems and Population Studies Division
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# Exploring Healthcare Landscape in Urban Bangladesh: Findings from Health Facility Mapping of Dinajpur Municipality in Bangladesh

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# ACKNOWLEDGEMENTS

This study was funded by Options Consultancy Services Limited, UK, through Urban Health System Strengthening Project (UHSSP). icddr,b acknowledges with gratitude the commitment of Options Consultancy Services Limited, the UK to its research efforts. icddr,b is also grateful to the Governments of Bangladesh, Canada, Sweden, and the UK for providing core/unrestricted support.

Special thanks to the Directorate General of Health Services (DGHS), Civil Surgeon and the Mayor of Dinajpur Municipality, and Directorate General of Family Planning (DGFP) for giving permission and supporting the implementation of this study. We also acknowledge all the administrative authorities of health programmes, NGOs, and private health associations for their consent to the survey and for providing information on their delivery points and services. The project could not have been successfully completed without the ceaseless effort of our hard-working teams, a sincere thanks to them.

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# ABBREVIATION

| | |
|---|---|
| ANC | Antenatal Care |
| BBS | Bangladesh Bureau of Statistics |
| CCU | Coronary Care Unit |
| ECG | Electrocardiography |
| DC | Delivery Centre |
| DGFP | Directorate General of Family Planning |
| DGHS | Directorate General of Health Services |
| DIC | Drop in Centre |
| DOTS | Directly Observed Treatment, Short-course |
| ENT | Ear, Nose, Throat |
| EPI | Expanded Program on Immunization |
| FSW | Female Sex Worker |
| GIS | Geographic Information System |
| GPS | Global Positioning System |
| HMIS | Health Management Information System |
| HSPSD | Health System and Population Studies Division |
| icddr,b | International Centre for Diarrhoeal Disease Research, Bangladesh |
| IMR | Infant Mortality Rate |
| ICU | Intensive Care Unit |
| JSON | JavaScript Object Notation Format |
| MNCH | Maternal, Neonatal, and Child Health |
| MSM | Men Who Have Sex with Men |
| MOH&FW | Ministry of Health and Family Welfare |
| MFL | Master Facility List |
| NVD | Normal Vaginal Delivery |
| NGOs | Non-Governmental Organisations |
| NHSDP | NGO Health Services Delivery Project |
| NICU | Neonatal Intensive Care Unit |
| PNC | Postnatal Care |
| UHC | Universal Health Coverage |
| UHA | Urban Health Atlas |
| U5MR | Under-five Mortality Rate |
| WHO | World Health Organization |

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# ABSTRACT


## BACKGROUND

Bangladesh is rapidly urbanising. Rapid urbanisation can be linked to both adverse and beneficial effects for public health. Population growth due to urbanisation has increased the demand for basic services (i.e. health). At the same time, limited government investments have created a vacuum in the provision of public health services in urban areas. The research project aimed to map the current status of the available healthcare providers for the urban population to promote evidence-based planning and decision making. The data included mapping of the existing health facilities of selected city corporations in urban Bangladesh (i.e. Dhaka, Chittagong, Sylhet, Khulna, Rajshahi, and Narayanganj) to reflect the demands and availability of services for the urban poor. Mapping of healthcare facilities in Dinajpur Municipality was the continuation of this initiative. icddr,b conducted a health facility mapping exercise in Dinajpur Municipality between March 2016 to April 2016. The aim was to document the geospatial data of existing public, non-government organisations, and private healthcare facilities in Dinajpur Municipality and to record the general and service features of selected service providers.

## METHODS

The data collection was a two-step process. In the first step, all the health facilities currently in operation were listed. In the next step, a health facility survey was conducted. A semi-structured tab-based facility survey questionnaire was developed for this purpose. Trained data collectors visited the facilities and interviewed the authorised personnel of the health facilities to collect information on the health facilities using the questionnaire.

## RESULTS

Eight hundred and six facilities were listed in Dinajpur Municipality. About 84 percent (674 out of 806) of the total facilities were private, mostly pharmacies and doctors chambers. Most of the 24/7 services were offered by private sector facilities and clustered in the central part of the city. There was a relative lack of emergency and critical care services.

## CONCLUSIONS

This report describes the results of a health facility mapping initiative in a municipality in Bangladesh using geospatial technology. The result suggests that the private sector dominates the healthcare landscape of Dinajpur municipality. The distribution of primary healthcare centres should be reconsidered to ensure satisfactory accessibility by all.



## KEY WORDS

Urban, mapping, health facility, municipality, healthcare planning

# Chapter 1

# INTRODUCTION

## BACKGROUND

Urbanisation is a process by which a large number of people become concentrated in urban areas.[1–3] This rapid migration of population to cities increases the demand for basic services which include water, sanitation, and hygiene (WASH), health, and education.[4] The rapid and unplanned urbanisation in Bangladesh is taxing to the government in its capacity to provide the above-mentioned essential services to citizens. Urbanisation makes rapid and significant changes to human living standards, lifestyles that impact social behaviour, health, and wellbeing of urban citizens.[5] For example, compared to the non-slum urban areas, only 13 percent of households in slums have access to improved sanitation whereas it is 50 percent in non-slum areas.6 Additionally, the under-five mortality rate (U5MR), infant mortality rate (IMR), and child mortality rate in slum settlements were higher than both non-poor areas and the national average.[6,7]

Despite the high density of healthcare services and skilled health workers, gender discrimination and socio-economic inequity create inequality in availability, accessibility, and utilisation of healthcare services.[8,9] Moreover, the absence of well-designed policies for health system strengthening further amplifies the differences in healthcare provision.[8] To meet the demand for quality healthcare, it is crucial to maintain a sustainable health system that can ensure equal service to all, particularly for the financially disadvantaged, vulnerable, and marginalised populations. The development of an effective regulatory healthcare system can play a vital role in this regard.[9,10] Sound information on the supply and the availability of health services is one of the essential factors of a sustainable health system. Moreover, policymakers and health system planners must have an accurate understanding of existing healthcare facilities to develop a picture of the demands and gaps of the urban health system. Given that a comprehensive master facility list (MFL) is the basis of monitoring the health services provided to the population[11], the use of Geographic Information System (GIS) can play an important role in this listing process.[12] Because health has an important environmental and spatial dimension, data furnished by GIS surveys can be particularly useful to health researchers and planners.[10] In Nepal and Mozambique, for example, such surveys have been conducted to strengthen the health systems and improve healthcare seeking.[12,13]

The Health Systems and Population Studies Division (HSPSD) at icddr,b has pioneered similar mapping exercises in Bangladesh, with a focus on the urban healthcare system. In addition to physically locating urban health facilities, information on existing infrastructure, services provided, and fees charged were also collected.

## GIS IN URBAN AREAS IN BANGLADESH

Prior to this effort, the specific health needs and services available to the urban population were not well-documented. Given the complex landscape of cities, there was an urgent need for updated information about the location of health facilities to help guide decision-making and provisions of essential services.[11] Considering the bulk of service provision in urban areas, a systematic approach to assess the geographic and financial availability of services was considered to be critical. Given the density of service provision in urban areas, a systematic approach to assess the geographic and financial availability of services was critical. This project developed a web-based interactive map in nine cities and municipalities across Bangladesh that capture information regarding the type, distribution, and cost of health services. These maps are displayed in the "urban health atlas" (UHA), a data visualisation tool that aids stakeholders in identifying coverage gaps between primary and tertiary care facilities, skilled staff availability, and hours of service.[14] Listing and mapping of healthcare facilities in Dinajpur Municipality was part of this broader initiative.

## OBJECTIVES

The present study aims to improve the coverage of quality health services with special attention to the urban poor and disadvantaged in Dinajpur Municipality. Its specific objectives are to:

a) Collect and document the geospatial data of existing health facilities (i.e. public, NGO, and private) in Dinajpur Municipality
b) Digitise the city road networks
c) Collect general and service attributes of the selected health service providers
d) Produce GIS maps of health facilities and share with stakeholders of Dinajpur Municipality

# Chapter 2

# METHODS

## SETTING

The health facility mapping exercise was executed in Dinajpur Municipality between March 2016 and April 2016. Figure 1 shows the location and distribution of the study area.

Dinajpur municipality is situated in the north-western part of Bangladesh. It is also one of the oldest municipalities of Bangladesh. It has a total population of 0.18 million residing across 12 wards.[15] Geographically, Dinajpur municipal is situated near the Punarbhaba river. It has a land area of [20.23] square kilometres.

## PREPARATORY WORK

Required permission was obtained from the relevant authorities including Mayors, Civil Surgeons (district health manager), and representatives from the Directorate General of Health Services (DGHS), and Directorate General of Family Planning (DGFP). Written confirmation was also obtained from the NGO partners that are operating in the Dinajpur Municipality. During the preparatory stage, a comprehensive list of all the health facilities (i.e. public, private, non-government) and health service delivery points (i.e. EPI centres, DOTS centres, DIC static and satellite clinics) was prepared. Moreover, to further strengthen the data authentication process, a secondary list of trade licenses from City Corporation, registration information from DGHS, and drug licenses from drug administration were collected.

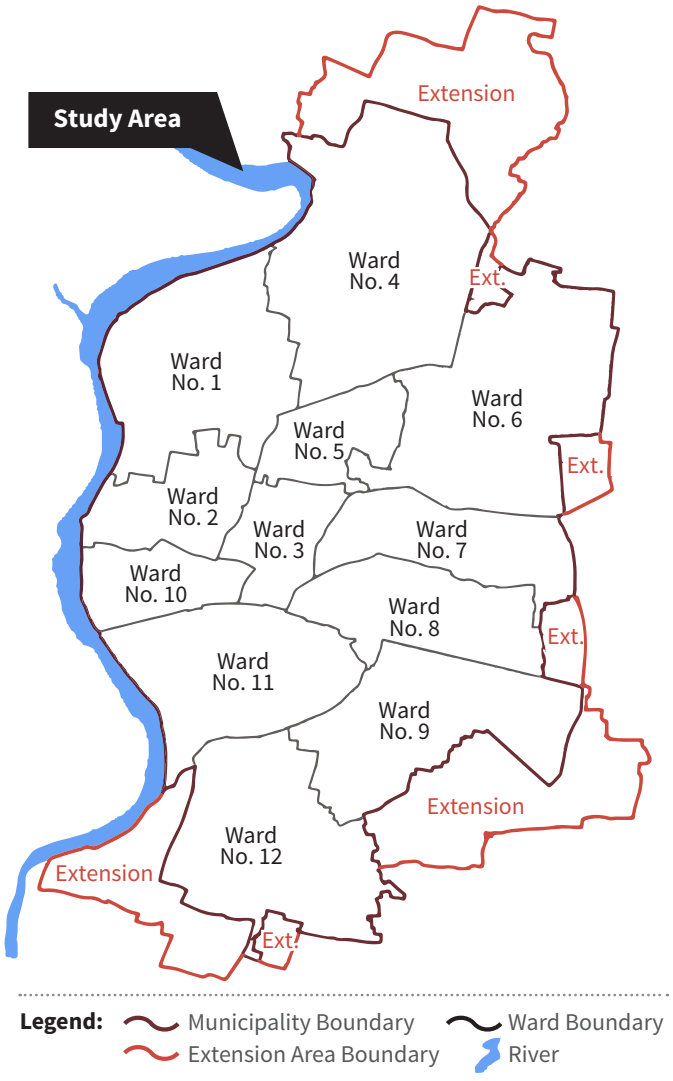


**Figure 1:** Location of the study area in Dinajpur Municipality

## APPLICATION DEVELOPMENT

A semi-structured facility survey questionnaire was developed by incorporating features from the master health facility listing guideline prepared by WHO and previous survey elements used in Sylhet and Dhaka.[16]

A web-based application, the "facility listing and survey app for UHA", was developed for tablet computers. The application could record and track GPS coordinates, capture road networks (including the type and width), insert key landmarks and insert facility locations when required. Most importantly, the application could add facilities using the digital version of the questionnaire used for conducting the facility survey. For accurate GPS tracking and survey, the ward boundaries and satellite images were transferred and listed in this application. All recorded data were saved locally on the tablet either in MySQL database or, in JSON (JavaScript Object Notation Format) so that the application could function off-line. Field testing of the application was performed in urban areas of another city corporation (Khulna) to identify problems and troubleshoot accordingly.

Using this customised smart device application, a base map of the municipality was created and updated based on GPS tracking and field observation (i.e. new roads and connectors, demolished roads). The features of this tool include recording of GPS coordinates, generating unique IDs based on time and day of recording, and numerical order in the facility list. The unique feature of real-time visualisation of one's position on a digital map in relation to the landmarks can help in minimise the range of error inherent to any other GPS device.

## STAFF TRAINING

A week-long training was organised for the 40-member data collection team to familiarise them with GIS applications. They attended practical sessions with Samsung Galaxy tablet 2 and received training on updating existing road networks and enter spatial locations of the health facilities.

## DATA COLLECTION

A two-step data collection process was employed: initial listing of all existing functional health facilities and current formal healthcare providers (except private doctors chambers), followed by the second step of health facility survey. Using this tool, health facility listing was done through transect walks across the study areas. To ascertain the completeness of the inventory, three approaches were followed: signboard observation, conversation with the proprietor, and conversations with community people.

Members from the data collection team visited health facilities physically for data collection. They interviewed the available relevant authorised personnel including clinic managers, hospital superintendents, and in few occasions doctors to gather information on the health facility. Information was collected on the following parameters: type of the health facility, management entity, facility focus, service hours of the facility, human resource, qualifications and training, and services offered by the facility. In case of unavailability of respondents (information provider), data collectors made multiple visits to complete the data collection. The data collection team successfully collected information from all health facilities targeted for the survey as the required permission for the survey was obtained beforehand.

## INCLUSION CRITERIA FOR SURVEY

Pharmacies (drug selling store), optical shops, doctors' chambers, and traditional healers were excluded from survey.

## OPERATIONAL DEFINITIONS

Due to the pluralistic health market and lack of uniform terminology across health facilities, commonly used terms are operationalised for clarity and consistency (Box 1)

### Box 1. Health facility type and definition

| FACILITY TYPE | DEFINITIONS |
|---|---|
| **Hospital** | Any formal institution providing both outdoor and indoor services with more than 30 beds (≥ 31). |
| **Clinic** | Any formal institution with or without indoor services having less than or equal 30 beds (≤ 30). |
| **Diagnostic Centre** | Facilities that provide medical testing and imaging facilities. In addition, some also provide out-patient services. |
| **Drop-in Centre (DIC)** | A facility that serves only specific groups of people such as sex workers, intravenous drug users, street children. Services are largely focused on health education, with clinical care available only one or two days a week. It can be either static or satellite. |
| **Blood Bank** | A facility whose primary function is blood collection, preservation, and sometimes transfusion service. Clinical services are not provided in this facility.[1] |
| **Delivery Centre (DC)** | Informal MNCH facilities run by BRAC and Caritas where vulnerable women can receive ANC and PNC services and have normal birth deliveries assisted by trained birth attendants or midwives. |
| **EPI Centre** | These facilities only provide immunisation services for children under the Government's Expanded Program of Immunization. |
| **Satellite Clinic** | Limited services offered by NGOs at the community level during particular hours and days in a week at a location that might not be specific. |
| **Doctors Chamber** | Private practice by doctors not attached with any larger institute like hospital or clinic. |
| **Pharmacy** | A facility that sells drugs as its primary service. |

[1] Some hospitals/clinics may have a blood bank facility at their premises but to avoid duplication and over-counting facilities it is considered as a service in that facility.

Some other pre-defined terms were:

**Specialists:** All allopathic practitioners with MBBS degree and have completed all parts of FCPS /FRCS/ MD/M.Phil/ MS/ MRCP/ MRCS degree.

**Dentists:** Having a BDS degree and in addition FCPS/ DDS/MS degree on Maxillofacial/Children/Conservative/ Orthodontics/Prosthodontics were recognised as Dental Surgeons (Specialists).

## ETHICAL CONSIDERATIONS

Signed consent was obtained from each respondent at health facilities prior to participation in this study. Participation was completely voluntary and each participant was given the right to withdraw at any moment of the survey.

## DATA QUALITY

During the health facility listing and survey, sudden spot checks were conducted aiming to ensure data validity and quality. Data rechecking was done to frame the data, maintain consistency and continue regular monitoring of data collection. For data validation, following a purposive sampling method, static and satellite clinics of NGO facilities were selected, matched-up, and verified by programme managers/clinic managers. If any anomaly was found by the statistician, the data was sent immediately to the field team. Weekly meetings were arranged to share work progress and obstacles faced in the field and solved through open group discussion.

## DATA PROCESSING

Collected data was routinely preserved in the MySQL database to avoid loss, and the data management team regularly cross-checked collected data for any inconsistencies.

## DATA ANALYSIS

Data was analysed using SPSS v. 20.0, STATA 13 and MS Excel. The major findings have been described using simple descriptive statistics like frequency distributions and cross tabulations in this report.

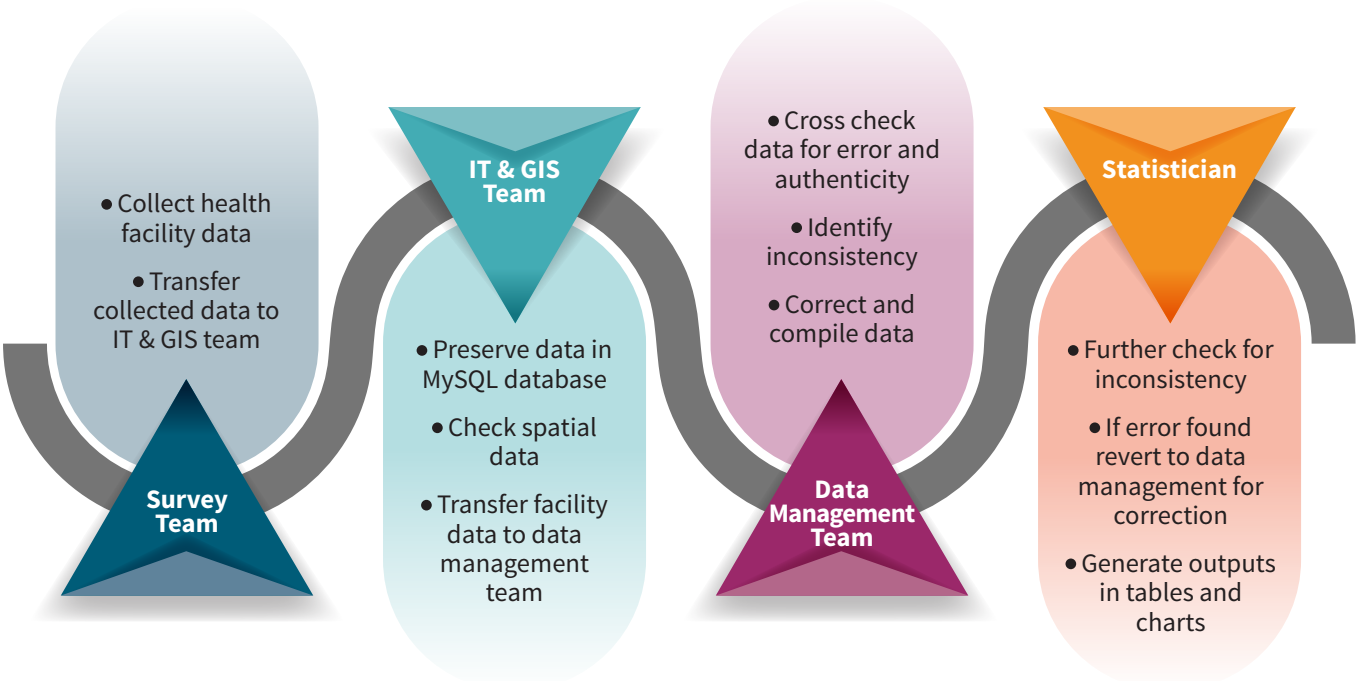


**Figure 2:** Data management process

# Chapter 3

# RESULTS

The first phase of the study consisted of listing all existing healthcare facilities in Dinajpur Municipality; a total of 806 facilities were listed. A large number of pharmacies, doctors chambers, and optical shops were reported. Because these facilities provided limited healthcare services, they were excluded from the survey.

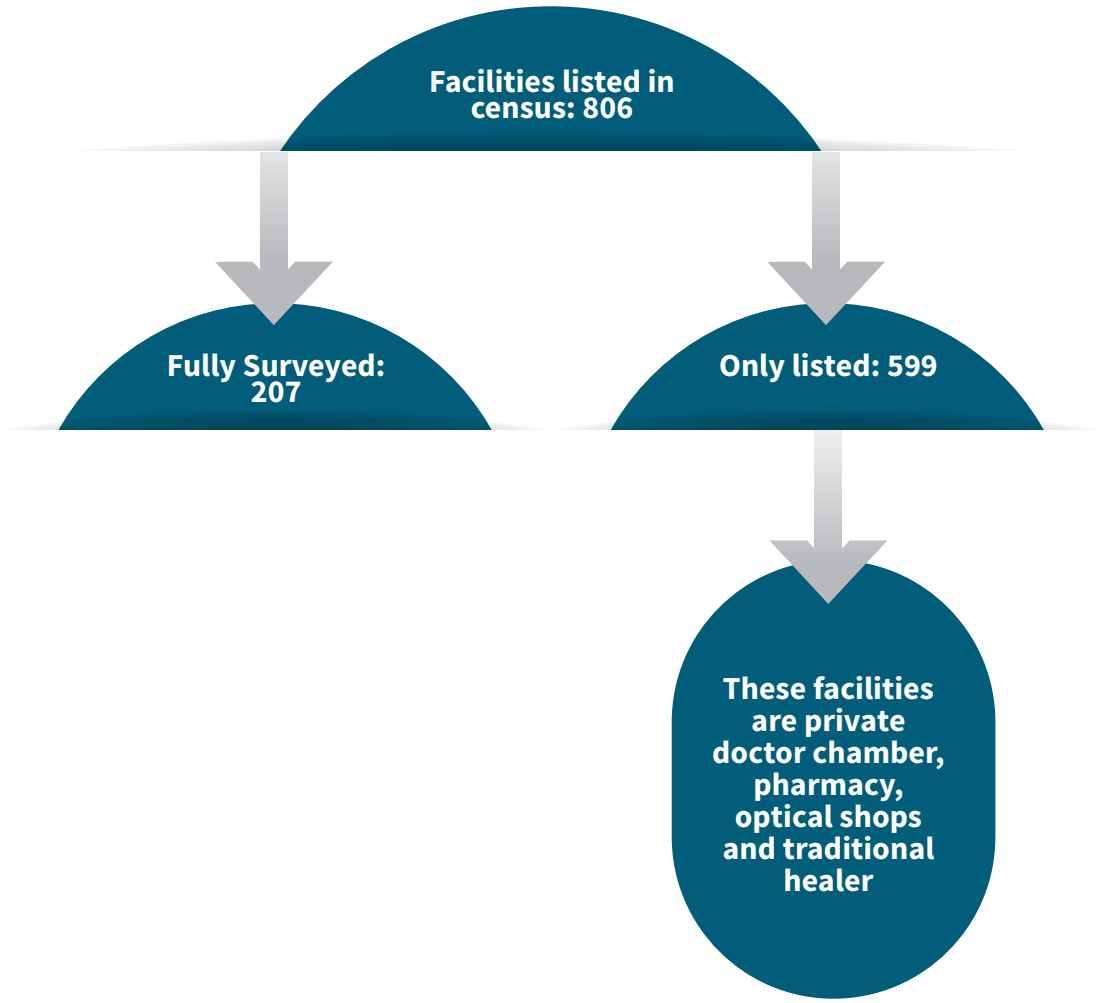


**Figure 3:** Number of facilities listed and surveyed

## TYPES AND DISTRIBUTION OF HEALTH FACILITIES

The breakdown of management of health facilities in Dinajpur Municipality are as follows: 3.9 percent public, 12.3 percent NGO, and 83.6 percent private (Figure 4).

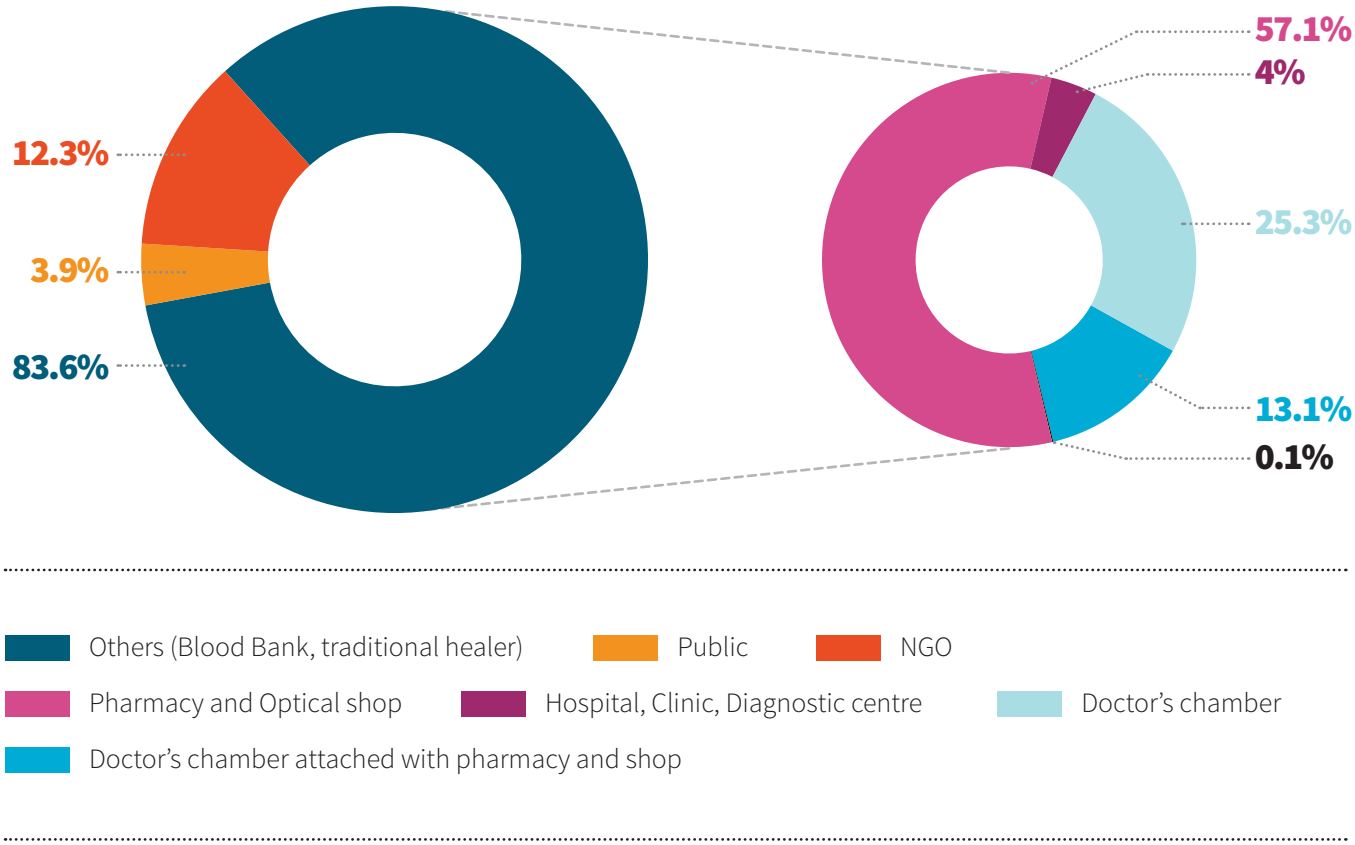


**Figure 4:** Percentage of the distribution of listing facilities (n=806)

The distribution of health facilities (pharmacies excluded) in relation to the population density per km$^2$ is described in Figure 5 which shows that health facility concentration closely corresponded to population concentration (darker grey areas). Facility concentration was observed to be less in the southern part of the municipality. There were no public facilities in wards 11 and 12 and the extension areas around those wards.

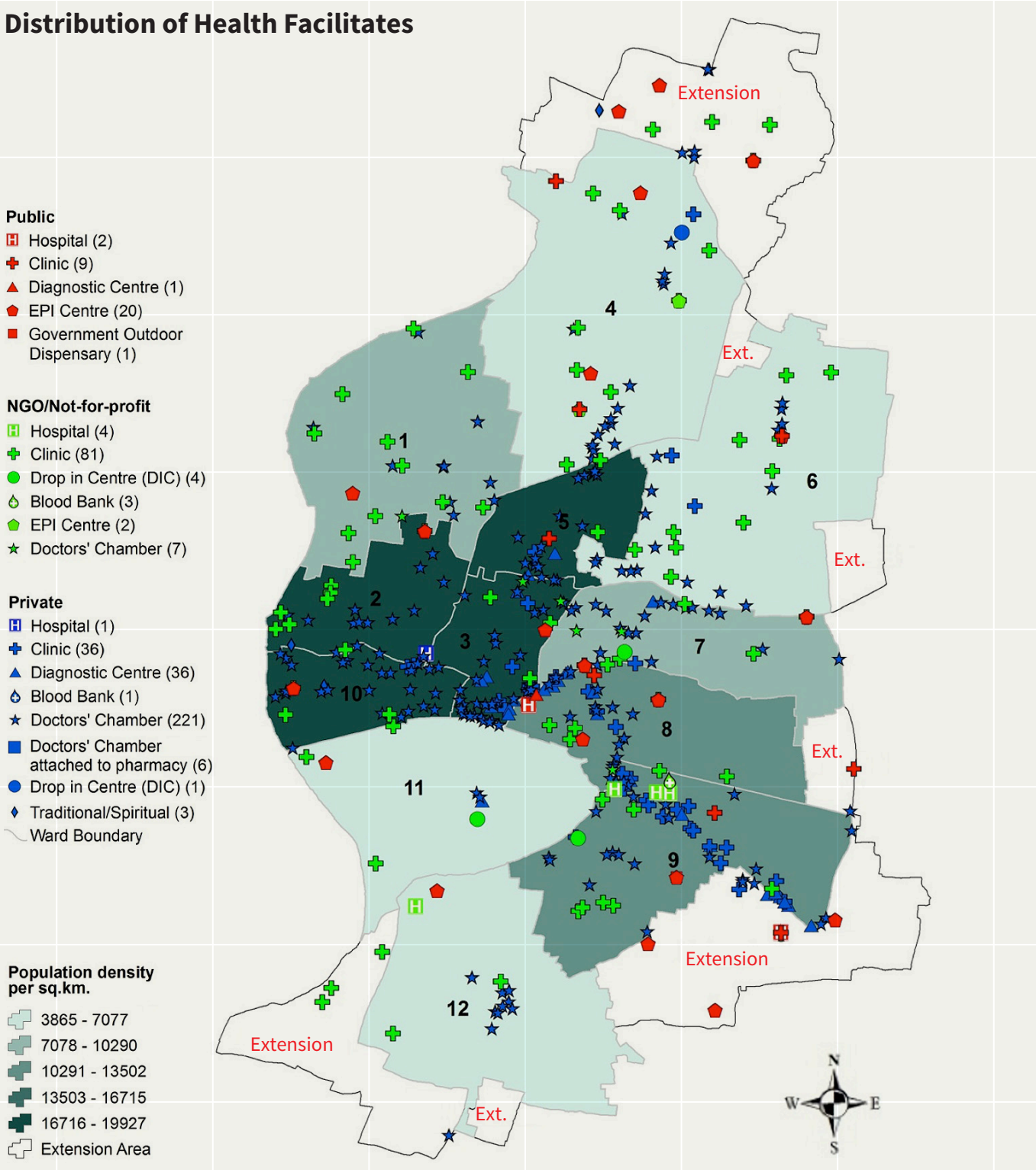


**Figure 5:** Relative density of health care facilities surveyed (by type)

In total, there were 207 facilitates surveyed in Dinajpur Municipality, of which 117 static facilities offered daily services at dedicated locations (Table 1). Only two hospitals and seven clinics were public facilities. About 90 satellite facilities, including clinics and EPI centres, were identified. The majority of the EPI centres were operated by the government whereas the majority of the satellite clinics were run by the NGOs.

**Table 1:** Number of surveyed facilities by the management entity in Dinajpur Municipality (n=207)

| Facility Type | Dinajpur Municipality (n=207) | | | |
|---|---|---|---|---|
| | Public (n=33) | NGO/Not-for-profit (n=99) | Private (n=75) | Total (n=207) |
| **STATIC** | | | | |
| Hospital | 2 | 4 | 1 | 7 |
| Clinic | 7 | 15 | 36 | 58 |
| Diagnostic Centre | 1 | 0 | 36 | 37 |
| Pharmacy attached with doctor's chamber | 1 | 0 | 0 | 1 |
| Doctors' Chamber | 0 | 5 | 0 | 5 |
| Drop In Centre (DIC) | 0 | 4 | 1 | 5 |
| Blood Bank | **0** | **3** | **1** | **4** |
| **Total** | **11** | **31** | **75** | **117** |
| **SATELLITE** | | | | |
| Clinic | 2 | 66 | -- | 68 |
| EPI centre | 20 | 2 | -- | 22 |
| **Total** | **22** | **68** | **0** | **90** |

## SPECIAL HEALTH PROGRAM

Dinajpur Municipality provided immunisation services through 23 government-led EPI centres (Table 2). An NGO (named BRAC) ran all three DOTS centres in Dinajpur Municipality. The NGO Health Service Delivery Project (NHSDP) operated 32 health service points including satellite spots and another NGO, named Marie Stopes Bangladesh, provided maternal and child health services through 23 health service points.

**Table 2:** Service delivery points providing Special Health Programs (n=62)

| Special Program | Public (n=23) | NGO (n=37) | Private (n=2) | Total (n=62) | |
|---|---|---|---|---|---|
| | | | | Frequency | Percentage |
| Govt. EPI | 23 | 3 | 1 | 27 | 43.5 |
| Govt. TB/DOTS | -- | 3 | -- | 3 | 4.8 |
| NHSDP | -- | 32 | -- | 32 | 51.6 |
| Marie Stopes Bangladesh | -- | 23 | -- | 23 | 37.1 |
| Others (ENT & general hospital) | -- | -- | 1 | 1 | 1.6 |

## SERVICE PATTERN

About 63 facilities provided outdoor services among which 36 were private diagnostic centres and eight were public facilities (Table 3). Outreach services were mainly provided by clinics operated by NGOs/not-for-profit organisations (68 out of 90). Only 2.4 percent of the total number of facilities surveyed was able to perform surgery in addition to in-patient services all of which were private (6.67 percent ).

**Table 3:** Mode of health service delivery (n=207)

| Service Nature | Public (n=33) | NGO/Not-for-profit (n=99) | Private (n=75) | Total (n=207) |
|---|---|---|---|---|
| Outdoor services only | 24.24 (8) | 19.2 (19) | 48 (36) | 30.4 (63) |
| Outreach services only | 66.67 (22) | 68.7 (68) | 0 (0) | 43.5 (90) |
| Outdoor services with surgery only | 0 (0) | 4 (4) | 1.33 (1) | 2.4 (5) |
| Indoor service without surgery only | 0 (0) | 0 (0) | 2.67 (2) | 1 (2) |
| Indoor service with surgery only | 0 (0) | 0 (0) | 6.67 (5) | 2.4 (5) |
| Outdoor and indoor services without surgery | 0 (0) | 0 (0) | 5.33 (4) | 1.9 (4) |
| Outdoor and indoor services with surgery | 9.09(3) | 8.1 (8) | 36 (27) | 18.4 (38) |
| **Total** | **100 (33)** | **100 (99)** | **100 (75)** | **100 (207)** |

Figure 6 presents the distribution of NGO/not-for-profit organisations health facilities across poor urban settlements. The dark grey colour represents the highest density of poor urban settlements. The map shows that 15 static clinics, four hospitals, four drop-in centres, and three blood banks – all of which were managed by NGO/ not-for-profit organisations and are distributed across Dinajpur Municipality. Most of them are situated around areas with a high density of poor settlements. Satellite clinics are evenly distributed across the municipality although their service is limited to one or two days/week. In the northern part of the municipality, static facilities are absent.

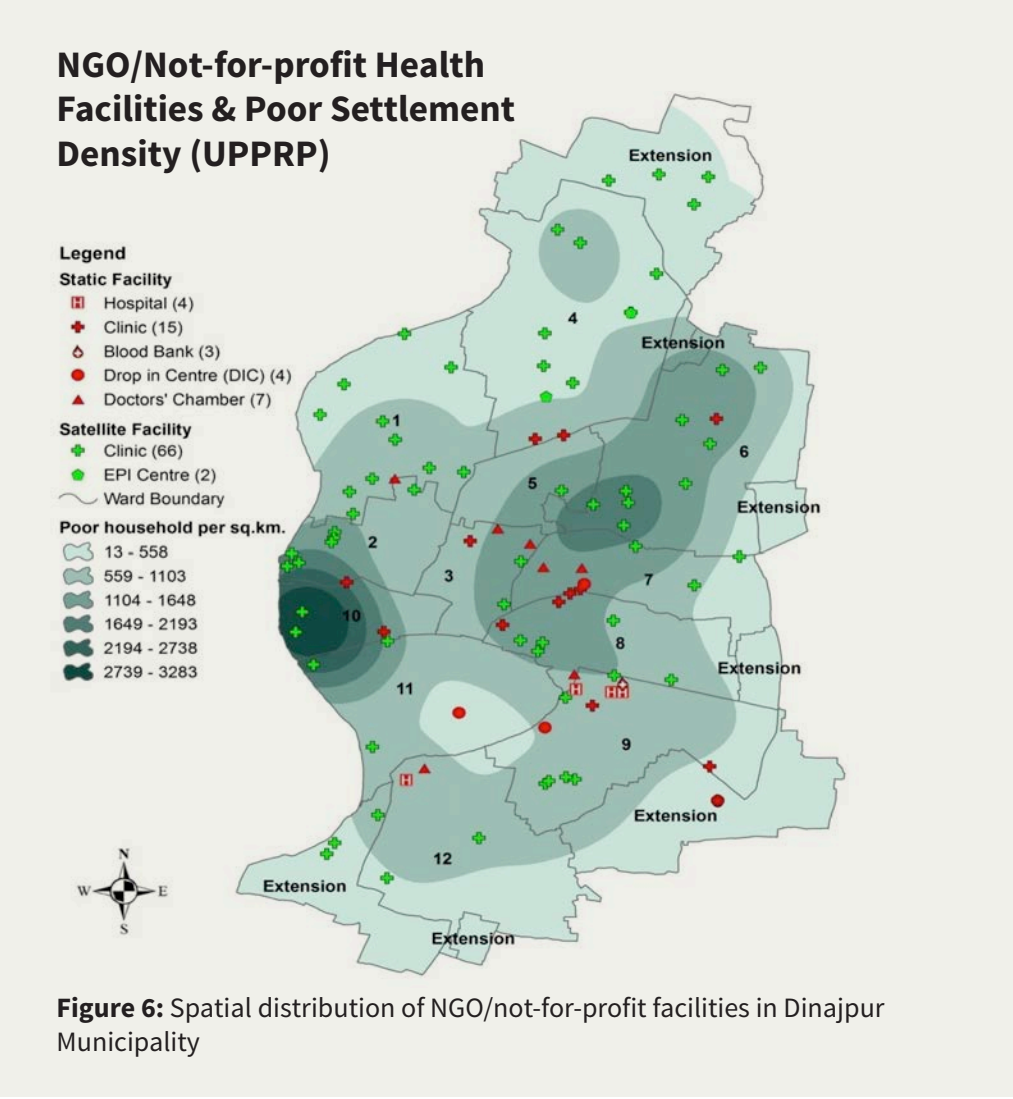


**Figure 6:** Spatial distribution of NGO/not-for-profit facilities in Dinajpur Municipality

Tables 4 and Table 5 illustrate the business days and service hours of static health facilities. Overall, 88 facilities offered services throughout the week. Most of them were private. In total, 50 facilities offered 24/7 services: three public facilities, nine NGOs, and 38 private. Private facilities had the widest range of service hours (38 out of 76) and those facilities remained open for 24 hours a day.

**Table 4:** Days of service provided in health facilities by management entity (n=207)

| Days of service | Public (n=33) | NGO/Not-for-profit (n=99) | Private (n=75) | Total (n=207) |
|---|---|---|---|---|
| **STATIC** | | | | |
| All week | 3 | 10 | 75 | 88 |
| 5-6 days | 8 | 19 | 0 | 27 |
| 3-4 days | 0 | 0 | 0 | 0 |
| 1-2 days | 0 | 2 | 0 | 2 |
| **Total** | **11** | **31** | **75** | **117** |
| **SATELLITE** | | | | |
| 5-6 days | 0 | 1 | -- | 1 |
| 3-4 days | 0 | 1 | -- | 1 |
| 1-2 days | 22 | 66 | -- | 88 |
| **Total** | **22** | **68** | **--** | **90** |

**Table 5:** Hours of service by management entity (n=207)

| Days of service | Public (n=33) | NGO/Not-for-profit (n=99) | Private (n=75) | Total (n=207) |
|---|---|---|---|---|
| **STATIC** | | | | |
| 24 hours | 3 | 9 | 38 | 50 |
| Morning-Evening | -- | -- | 36 | 36 |
| Morning-Afternoon | 8 | 21 | 1 | 30 |
| Evening Only | -- | 1 | -- | 1 |
| **Total** | **11** | **31** | **75** | **117** |
| **SATELLITE** | | | | |
| Morning-Afternoon | 22 | 68 | -- | 90 |
| **Total** | **22** | **68** | **--** | **90** |

The map in Figure 7 shows the distribution of health facilities that offers health services 24 hours and seven days a week along with the population density in Dinajpur Municipality (pharmacies excluded). The majority of clinics offered 24/7 healthcare services in Dinajpur Municipality – most of which were clustered in the central part of the city. In the northern and southern parts of the city 24/7 care facilities were largely absent.

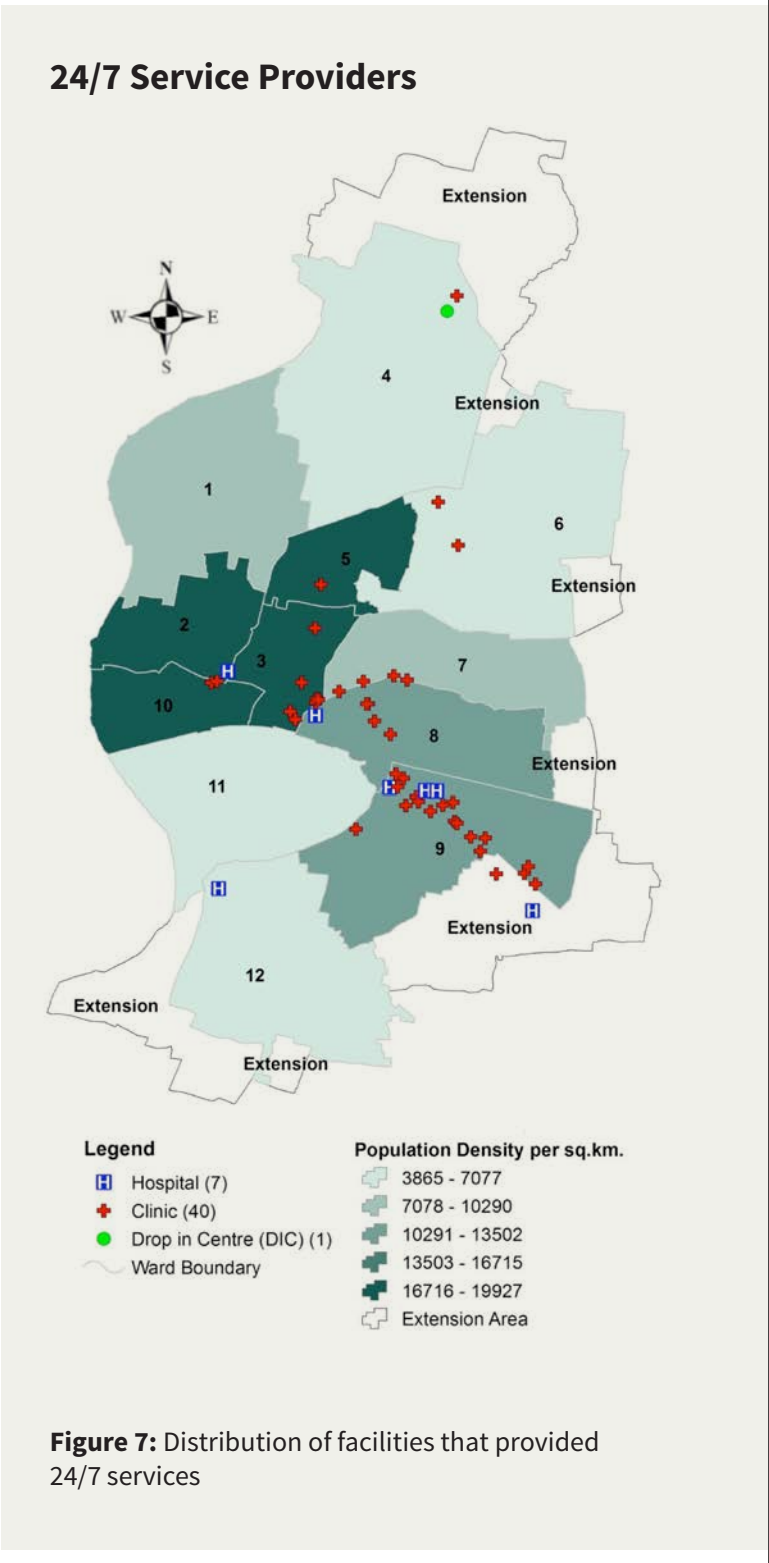


**Figure 7:** Distribution of facilities that provided 24/7 services

Twenty-five private facilities had doctors around the clock (Table 6). Among most of the public and NGO/ not-for-profit facilities, doctors were available from 8 am till evening.

**Table 6:** Time of the day when doctors are available, by management entity (n= 91)

| | Public (n=10) | NGO/Not-for-profit (n=20) | Private (n=61) | Total (n=91) |
|---|---|---|---|---|
| 24 hours | 30 (3) | 35 (7) | 40.98 (25) | 38.5 (35) |
| Morning-Evening | -- | -- | 13.11 (8) | 8.8 (8) |
| Morning-Afternoon | 70 (7) | 60 (12) | 13.11 (8) | 29.7 (27) |
| Afternoon-Evening | -- | -- | 19.67(12) | 13.2 (12) |
| Afternoon Only | -- | 5 (1) | 6.56 (4) | 5.5 (5) |
| Evening Only | -- | -- | 6.56 (4) | 4.4 (4) |
| **Total** | **100 (10)** | **100 (20)** | **100 (62)** | **100 (91)** |

## SERVICE CAPACITY: HUMAN RESOURCES AND BED NUMBERS

A total of 3,650 staff were reported in 117 health facilities (static) (Table 7). However, this may be an overestimated calculation since working at multiple facilities is a common practice in Bangladesh.

General surgeons comprised the bulk of specialists, followed by gynaecologists and obstetricians (Figure 8). The least available specialists were neurosurgeons, cardiac surgeons, paediatric surgeons, and haematologists.

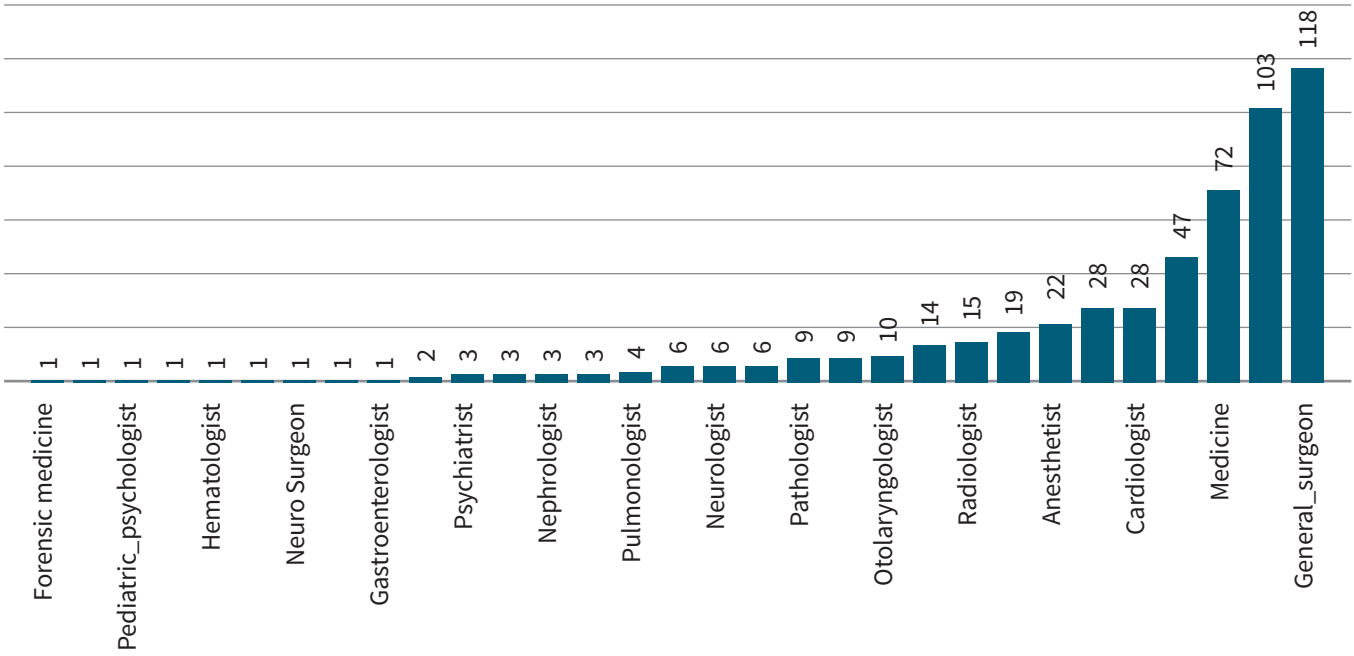


**Figure 8:** Number of specialists in Dinajpur Municipality, by management entity (n=73)

**Table 7:** Number of staff by management entities in Dinajpur Municipality (n=117)

| | Public (n=11) | | | | NGO/Not-for-profit(n=31) | | | | Private (n=75) | | | | Total (n=117) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Total | Mean | Median | Range | Total | Mean | Median | Range | Total | Mean | Median | Range | Total | Mean | Median | Range |
| Physician | 159 | 17.3 | 2 | 1-110 | 183 | 9.2 | 2 | 1-46 | 729 | 10.5 | 7.5 | 1-48 | 1071 | 10.8 | 6 | 1-110 |
| Nurse | 254 | 127 | 127 | 64-190 | 110 | 18.3 | 3 | 1-51 | 128 | 4.6 | 3 | 1-31 | 492 | 13.7 | 3 | 1-190 |
| Midwives | 4 | 4 | 4 | -- | 21 | 10.5 | 10.5 | 1-20 | 4 | 2 | 2 | 1-3 | 29 | 5.8 | 3 | 1-20 |
| Pharmacists | 7 | 1.8 | 1 | 1-4 | 9 | 2.3 | 1 | 1-6 | 2 | 1 | 1 | -- | 18 | 1.80 | 1 | 1-6 |
| Paramedics | 1 | -- | -- | -- | 27 | 2.7 | 2.5 | 1-5 | 5 | 1.5 | 1 | 1-3 | 33 | 2.4 | 2 | 1-5 |
| Non-physicians clinicians | 57 | 6.2 | 6 | 1-15 | 118 | 5.4 | 2 | 1-32 | 309 | 4.3 | 4 | 1-15 | 484 | 4.7 | 4 | 1-32 |
| Community health worker | 1 | 1 | 1 | -- | 26 | 2.9 | 2 | 1-6 | 9 | 4.5 | 4.5 | 4-5 | 36 | 3 | 2.5 | 1-6 |
| Other staff | 2 | 2 | 2 | -- | 5 | 1.3 | 1 | 1-2 | 5 | 1.7 | 1 | 1-3 | 12 | 1.5 | 1 | 1-3 |
| Support staff | 338 | 30.72 | 5.5 | 1-207 | 537 | 21.5 | 10 | 1-143 | 636 | 8.48 | 6 | 1-93 | 1511 | 13.70 | 6 | 1-207 |
| **Total Staff** | **824** | **74.9** | **12** | **2-524** | **1010** | **32.5** | **10** | **1-264** | **1816** | **24.21** | **20.5** | **2-176** | **3650** | **31.2** | **17** | **1-524** |

Table 8 shows the number of in-patient beds available in health facilities in Dinajpur Municipality. Among the 207 health facilities surveyed, 49 housed in-patient service and had the capacity for 1,611 patient beds altogether. The public sector facilities had the highest number of beds.

**Table 8:** Number of patient beds by management entity (n=49)

| | Public (n=3) | NGO/Not-for-profit (n=8) | Private (n=38) | Total (n=49) |
|---|---|---|---|---|
| **Maternity Bed** | **n=3** | **n=5** | **n=4** | **n=12** |
| Total bed | 133 | 61 | 23 | 217 |
| Mean bed | 44.3 | 12.2 | 5.8 | 18.1 |
| Median bed | 46 | 10 | 5 | 10 |
| Minimum | 10 | 3 | 3 | 3 |
| Maximum | 77 | 30 | 10 | 77 |
| **General Bed** | **n=2** | **n=6** | **n=38** | **n=46** |
| Total bed | 627 | 282 | 485 | 1394 |
| Mean bed | 313.5 | 47 | 12.7 | 30.3 |
| Median bed | 313.5 | 50 | 10 | 10 |
| Minimum | 204 | 2 | 7 | 2 |
| Maximum | 423 | 100 | 50 | 423 |
| **Overall** | **n=3** | **n=8** | **n=38** | **n=49** |
| Total bed | 760 | 343 | 508 | 1611 |
| Mean bed | 253.3 | 42.8 | 13.3 | 32.9 |
| Median bed | 250 | 30 | 10 | 10 |
| Minimum | 10 | 5 | 9 | 5 |
| Maximum | 500 | 100 | 50 | 500 |

## HEALTH SERVICES

Almost all health facilities offered general services, such as support for diabetes patients, blood transfusions, pharmacies, maternal health, etc (Table 9). However, emergency and critical care services, such as critical care unit (CCU), and intensive care unit (ICU) were rare in Dinajpur Municipality. NGOs played an important role in family planning and health education.

**Table 8:** Number of patient beds by management entity (n=49)

| | Public | NGO/Not-for-profit | Private | Total |
|---|---|---|---|---|
| **General health service** | | | | |
| Diabetes | 3 | 13 | 38 | 54 |
| Blood transfusion | 2 | 1 | 3 | 6 |
| Blood bank | 1 | 3 | 1 | 5 |
| Pharmacy | 11 | 89 | 10 | 110 |
| Arthritis | 7 | 12 | 44 | 63 |
| Eye exam | 3 | 2 | 3 | 8 |
| Maternal health | 3 | 6 | 29 | 38 |
| TB (Dot's) | 2 | 3 | -- | 5 |
| Leprosy (Multidrug therapy) | -- | 1 | -- | 1 |
| **Emergency and critical care service** | | | | |
| First Aid & Casualty | 7 | 41 | 36 | 84 |
| CCU | 1 | 1 | -- | 2 |
| ICU | -- | 1 | -- | 1 |
| Burn unit | 1 | -- | -- | 1 |
| Ambulance service | 3 | 5 | 8 | 16 |
| **Types of family planning** | | | | |
| Temporary Family Planning Methods | 4 | 77 | 4 | 85 |
| Long Term Family Planning Methods | 1 | 15 | 4 | 20 |
| Permanent Family Planning Methods | 3 | 7 | 18 | 28 |
| **Types of surgery** | | | | |
| **Major surgery** | | | | |
| General | 2 | 6 | 31 | 39 |
| Laparoscopic | 2 | 2 | 8 | 12 |
| CS | 3 | 6 | 30 | 39 |
| **Minor surgery** | | | | |
| MR | 1 | 5 | 2 | 8 |
| Abscess drainage | 3 | 8 | 32 | 43 |
| D&C | 3 | 7 | 24 | 34 |
| **Dental surgery** | | | | |
| Dental | 2 | 2 | 3 | 7 |
| **Health Education** | | | | |
| Adolescent | 11 | 71 | -- | 82 |
| Elderly | 1 | 8 | -- | 9 |
| SRH | 13 | 67 | 8 | 88 |
| Maternal | 11 | 69 | 7 | 87 |
| Family planning | 13 | 77 | 7 | 97 |
| Others | 3 | 1 | 1 | 5 |
| **Nature of sexual & reproductive health service** | | | | |
| Sexual/reproductive tract infection | 7 | 51 | 38 | 96 |
| Family Planning counselling | 13 | 76 | 28 | 117 |
| Family Planning products | 4 | 68 | 1 | 73 |
| **Nature of general curative service** | | | | |
| Respiratory infection | 7 | 26 | 47 | 80 |
| Diarrhoea | 6 | 31 | 40 | 77 |
| Skin infection | 6 | 20 | 39 | 65 |

*Multiple Responses

There was no provision for MRI and CT scan services in private facilities although X-ray and ultrasonography facilities were available in all types of facilities. Cytology and pathology services (i.e. CBC, urine, and stool routine microscopy examination, RME) were also available in all types of facilities (not shown in table).

Among the facilities surveyed, only one public facility specialised in maternal health and two public facilities on child health (Table 10). Three NGOs/not-for-profits provided services for female sex workers (FSW), men who have sex with men (MSM), and intravenous drug users.

**Table 10:** Facility focus based on target population and services by management entities*

| Specific Group | Public (n=4) | NGO/Not-for-profit (n=10) | Private (n=8) | Total (n=22) |
|---|---|---|---|---|
| Maternal health | 1 | 0 | 0 | 1 |
| MSM health | 0 | 1 | 0 | 1 |
| FSW health | 0 | 1 | 0 | 1 |
| IDU health | 0 | 1 | 3 | 4 |
| Child health | 2 | 0 | 1 | 3 |
| Other | 1 | 1 | 2 | 4 |
| People with Autism & Disability | 1 | 0 | 2 | 3 |
| MSW | 0 | 1 | 0 | 1 |
| **Service** | | | | |
| Drug rehabilitation | 0 | 1 | 3 | 4 |
| Eye | 0 | 1 | 0 | 1 |
| Mental health | 0 | 0 | 1 | 1 |
| **Other focus services** | 2 | 6 | 3 | 11 |
| AIDS & Sexual aware | 0 | 1 | 0 | 1 |
| National Institute of Diseases of the Chest and Hospital | 1 | 0 | 0 | 1 |
| Blood Bank | 0 | 3 | 1 | 4 |
| Cardiology | 0 | 1 | 0 | 1 |
| ENT | 0 | 0 | 1 | 1 |
| Paralysis Treatment | 0 | 0 | 1 | 1 |
| Physiotherapy | 1 | 0 | 0 | 1 |
| TB | 0 | 1 | 0 | 1 |

*Multiple Responses

Table 11 shows the number of facilities with special service provisions for the poor. About 72 private healthcare facilities offered “subsidy for services” and nine private facilities provided “free services”.

**Table 11:** Service provision for the poor by management entities (n=170)

| Provision for the poor | NGO/Not-for-profit (n=83) | Private (n=75) | Total (n=170) |
|---|---|---|---|
| Discounted medicine | 1 | -- | 1 |
| Free beds | -- | 2 | 2 |
| Subsidy for services | 40 | 72 | 112 |
| Free services | 43 | 9 | 52 |
| Health cards | 51 | 1 | 52 |

*Multiple Responses

## COST OF HEALTH SERVICES

There is a significant variation in pricing among public, private, and NGO sectors (Table 12) for specific services. Public facilities provided services "free-of-charge" or at a nominal registration fee. NGOs offered subsidised or free services through issuance of health cards, and/or providing regular services at lower prices.

**Table 12:** Cost of selected health services in BDT (n=117)

| Service Cost in BDT [1BDT= .012USD] | Public (n=11) | | | NGO/Not-for-profit (n=31) | | | Private (n=75) | | | Total(n=117) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Mean | Median | Range | Mean | Median | Range | Mean | Median | Range | Mean | Median | Range |
| ECG | 80 | 80 | -- | 200 | 200 | -- | 243.1 | 250 | 150-500 | 233.6 | 250 | 80-500 |
| Pregnancy ultrasonogram | 173.3 | 110 | 110-300 | 266 | 250 | 80-500 | 478.3 | 500 | 250-730 | 388.9 | 500 | 50-730 |
| C-section (package) | 3250 | 3250 | -- | 8314.3 | 9000 | 5200-10000 | 8664.3 | 8000 | 5500-15000 | 8445.8 | 8000 | 3250-15000 |
| C-section (non-package) | 0 | 0 | 0 | 6900 | 7500 | 3000-9500 | 7240 | 7000 | 3000-13000 | 7183.3 | 7250 | 3000-13000 |
| Chest x-ray | 70 | 70 | -- | 175 | 175 | 150-200 | 206.8 | 200 | 150-400 | 198.6 | 200 | 70-400 |
| NVD (package) | 0 | 0 | 0 | 2550 | 2000 | 1500-5000 | 3913.8 | 4000 | 1000-8000 | 3649.9 | 3000 | 1000-8000 |
| NVD (non-package) | 0 | 0 | 0 | 2050 | 1750 | 1000-3700 | 3095.5 | 3000 | 1500-5000 | 2934.7 | 3000 | 1000-5000 |
| Random blood sugar | 58.1 | 60 | 40-60 | 85.6 | 80 | 10-120 | 101.2 | 100 | 50-150 | 91.9 | 100 | 10-150 |
| Urine routine | 21.9 | 20 | 20-40 | 45.8 | 50 | 30-80 | 50.5 | 50 | 40-80 | 46 | 50 | 20-80 |

# Chapter 4

# DISCUSSION AND CONCLUSION

This report summarises findings from a census listing and survey of health facilities in a selected municipality in Bangladesh. Visualisations of the health facilities suggest that private sector health services are widely available, but the distribution of government-owned and primary healthcare facilities need to be reconsidered in order to provide optimum access to healthcare services for all. It also provided a scope for recognising the different entities who are providing healthcare services to the population, health facility locations, and the timing of service availability, all of which form healthcare seeking decisions.

The facility mapping also provided an opportunity to explore service provision in relation to population density and identify the scope for future investments to promote effective service delivery coverage and achieve better health outcomes for all citizens. Such information, if updated regularly, will guide and support decision making for health system strengthening by highlighting the need to increase certain types of health facilities and services. Health facility mapping can potentially help in identifying facilities that are not registered or running without a license and promote good governance, accountability, and quality at the municipality level. Information on costs of services may also assist in regulating, reviewing and controlling pricing practices, specifically among private healthcare providers. Finally, maps available online through smartphone applications or electronic gadgets can be useful for the general public to locate the nearest health service points and specialised services in an emergency.

# Chapter 5

# IMPLICATIONS FOR POLICY AND PRACTICE

- In Dinajpur Municipality, health facilities are reasonably distributed relative to population density but they are not evenly distributed. Moreover, the density of static facilities was relatively low in the northern and southern part of the municipality. This situation can be considered in decision-making related to opening of new health facilities in the municipality.
- NGO facilities are evenly distributed except the southern periphery. Overlapping of NGO services was observed in the wards 2, 8 and 10. In this case, relocation of health facilities may be considered to enhance service coverage in the municipality.
- Only a handful of 24/7 health services were available in wards located in the central part of the municipality. Enhancement of 24/7 healthcare services in existing health facilities can be helpful to strengthen emergency healthcare services.
- Finally, critical services like NICU and modern diagnostic facilities like MRI and CT scan were absent in Dinajpur Municipality and other emergency and critical services were available only in limited number (only one or two) of health facilities. These services need to be established to better serve population health needs.

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