Draft Report
on
Baseline Assessment of the Integrated Health, Water, Sanitation and Hygiene Services Under the Rehabilitation Program for Upliftment of Ultra-Poor Slum Dwellers in Mohammadpur and Mirpur in Dhaka City and Saidpur in Nilphamari District in Bangladesh

The study was conducted by:

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ABBREVIATIONS

AIDS	Acquired Immunodeficiency Syndrome
ANC	Antenatal Care
BDT	Bangladesh Taka
BCG	Bacillus Calmette–Guérin
COVID-19	Corona Virus Disease-19
DE	Design Effect
DHS	Demographic and Health Survey
DNCC	Dhaka North City Corporation
DSCC	Dhaka South City Corporation
ENC	Essential Newborn Care
FSM	Fecal Sludge Management
FGD	Focus Group Discussion
FP	Family Planning
FSNSP	Food Security and Nutrition Surveillance Project
FWA	Family Welfare Assistant
FWV	Family Welfare Visitor
GOB	Government of Bangladesh
GDP	Gross Domestic Products
HH	Household
HIV	Human Immunodeficiency Virus
IDI	In-depth Interview
IRB	Institutional Review Board
IYCF	Infant and Young Child Feeding
LPG	Liquid Petroleum Gas
MCH	Maternal and Child Health
MICS	Multiple Indicator Cluster Survey
MNCH	Maternal, Neonatal and Child Health
NCD	Non-communicable Disease
NGO	Non-Governmental Organization
ODK	Open Data Kit
PNC	Postnatal Care
SRH	Sexual and Reproductive Health
SK	Sasthya Karmi
SS	Sasthya Sebika
SSC	Secondary School Certificate
TT	Tetanos Toxoid
UDP	Urban Development Progamme
WHO	World Health Organization

EXECUTIVE SUMMARY

The Urban Development Programme of BRAC (BRAC UDP) is implementing a project titled 'The Integrated Health, Water, Sanitation and Hygiene Services Under the Rehabilitation Program for Upliftment of Ultra-Poor Slum Dwellers in Mohammadpur and Mirpur in Dhaka City and Saidpur in Nilphamari District in Bangladesh.' The project aims to improve health and nutrition status and WASH facilities and services in selected slums of Mohammadpur, Mirpur, and Saidpur, the dwelling places of low-income people. In this study, we assessed maternal health, child health, non-communicable diseases, communicable diseases, and WASH services and practices before the beginning of the implementation of the project.

We conducted a mixed-method study among low-income people in the selected clusters of the slums under the project in Mirpur, Mohammadpur, and Saidpur areas. The slums of these areas covered by the project were divided into clusters of 200-250 households. For the quantitative component of the study, we randomly selected 31 clusters (12 from Mirpur, 11 from Mohammadpur, and 8 from Saidpur). The number of clusters was proportionate to the total population living in the project slums of the area. We identified households with <2 years old children and collected household socio-economic and demographic data in these clusters. We also collected information on maternal and child health, non-communicable and communicable diseases, water and sanitation, and hygiene (WASH) practices. We conducted focus group discussions (FGD) and in-depth interviews (IDI) for the qualitative component. The FGDs with adolescent girls and boys investigated the care-seeking status for sexual and reproductive health. The IDIs with WASH entrepreneurs explored the system for collection, transportation, and solid and fecal waste treatment. The IDIs with the health service providers collected data on referral networks for maternal health, child health (MCH), communicable and non-communicable diseases. Qualitative data collection was done using a pre-tested structured questionnaire launched on an online data collection platform named KoboToolBox. Pretested guidelines were used for conducting FGDs, and IDIs. Both quantitative and qualitative teams received training on data methodologies and tools. All quantitative analyses were conducted using the statistical software Stata version 17.0 (StataCorp LLC, College Station, TX, USA). Verbatim transcription was done for all FGDs and IDIs. Then, each transcript was coded deductively and inductively. Thematic analysis was done under broader themes for each component (WASH, SRH, and Referral Network). Intersectionality analysis was done for each theme according to gender, age, socio-economic status, etc. The key findings from the quantitative and qualitative components are given in separate sub-sections below.

Quantitative findings

In the 31 clusters, we visited 4,970 households but could collect detailed information from 4,223 households as the other households were locked or no respondent was available to provide information. In the listed households, 6% of inhabitants were <2 years old children, 25% were adolescents, and 32% were 20-49 years old adults. Overall, the average household size was 4.4 (4.3 in Mirpur, 4.7 in Mohammadpur, and 4.3 in Saidpur). Overall, ninety-eight percent of households owned a telephone/mobile phone, nearly three-fourths of the household used clean fuel (electricity, or natural gas, or liquid petroleum gas). However, clean fuel use was only 51% in Saidpur. About 40% of the households had severe food insecurity (34% in Mirpur, 45% in Mohammadpur, and 40% in Saidpur), and 78% of the households needed to rely on unsustainable means to obtain food. The median income of the households was 10,000 BDT.

Thirty percent of the household heads (28% in Mirpur, 33% in Mohammadpur, and 28% in Saidpur) and 31% of the mothers of <2 years old children (29% in Mirpur, 35% in Mohammadpur, and 29% in Saidpur) did not have any formal education. The household heads and mothers of <2 years old children were involved with diverse occupations, including day laborers, transport workers, business, and homemakers.

Maternal health and family planning (FP)

We interviewed 682 mothers of <2 years old children. Ninety-nine percent of them were currently married. Their median age, the median age at menarche, was 24 years and 13 years, respectively. Overall, 53% used sanitary pads (61% in Mirpur, 55% in Mohammadpur, and 40% in Saidpur) during menstruation. Eighty-one percent of women or their husbands in Mirpur, 79% of women or their husbands in Mohammadpur, and 72% of women or their husbands in the Saidpur area were using family planning methods. In Mirpur and Mohammadpur, condoms were the most frequently used FP method, while in Saidpur, the pill was used most commonly. In all the areas, the most frequent source of FP methods was medicine shops. The majority of couples (56%) took a joint decision about the use of FP methods. Side effects of family planning methods were rarely mentioned as a cause behind the non-use of FP methods.

Overall, 96% of women took antenatal care (ANC), and 60% received at least 4 ANC (60% in Mirpur, 69% in Mohammadpur, and 46% in Saidpur). The place of ANC differed by area. For example, in Mohammadpur, 73% of women received ANC from public health facilities, in Mirpur, 38% went to private providers, and in Saidpur, 66% went to NGO providers. Almost all (98%) ANC was delivered by qualified providers (65% by physicians), and 81% of women underwent ultrasonography during the last ANC (82% in Mirpur, 87% in Mohammadpur, and 70% in Saidpur). The women received different advice during ANC. The most common advice was about iron and folic acid intake (93%), rest (85%), avoidance of heavy work (84%), and diet (83%). The women had to spend a large amount of money for

ANC. On average, they spent BDT 4,325 for the last ANC (BDT 4948 in Mirpur, BDT 5089 in Mohammadpur, and 2371 in Saidpur). Overall, 86% took iron and folic acid tablets, 83% took calcium tablets during the pregnancy, and 87% had TT vaccination coverage. On average, the women could take more than 4 hours of rest, and they could sleep about 8 hours. A large proportion of women (44% overall, 40% in Mirpur, 44% in Mohammadpur, and 47% in Saidpur) reduced food intake during the last pregnancy. The majority of women and their husbands (54% overall, 56% in Mirpur, 59% in Mohammadpur, and 44% in Saidpur) jointly decided about ANC. Regarding birth preparedness, 93% of women selected a place of delivery, 85% saved money, 56% identified blood donors, and 17% arranged transportation beforehand. Consistent with the place of ANC, the most common facilities planned for childbirth were public facilities in Mohammadpur, private clinics in Mirpur, and NGO facilities in Saidpur. Overall, 36% of women (36% in Mohammadpur, 28% in Mirpur, and 49% in Saidpur) experienced at least one complication during pregnancy. Among the women who experienced complication(s) during pregnancy, 87% sought treatment.

Concerning the mode of delivery, 51% of women delivered by C-section (51% in Mirpur, 54% in Mohammadpur, and 45% in Saidpur). Assisted vaginal delivery was also common (24% overall, 26% in Mirpur, 25% in Mohammadpur, and 20% in Saidpur). In alignment with the planned place of delivery, a large proportion of delivery took place in public facilities, private facilities, and NGO facilities in Mohammadpur, Mirpur, and Saidpur, respectively. Overall, 65% of deliveries were conducted by physicians (79% in Mohammadpur, 61% in Mirpur, and 53% in Saidpur). However, in the case of home deliveries, almost all deliveries were conducted by trained or untrained traditional birth attendants. Family and friends emerged as key decision-makers for delivery care-seeking. Overall, 35% of delivery care-seeking decisions (42% in Mohammadpur, 39% in Mirpur, and 24% in Saidpur) were taken by friends and families. Moreover, the women herself could decide on care-seeking for delivery in 30% of cases (25% in Mohammadpur, 23% in Mirpur, and 48% in Saidpur). Overall, 19% of women experienced complication(s) during childbirth.

About one-third of the participating women reported that they sought postnatal care (PNC) after their last childbirth. The proportion of seeking PNC services was highest in the Saidpur area (59%) and lowest in the Mirpur area (19%). The most common place for PNC was private facilities in Mohammadpur and private clinics in Mirpur and Saidpur. Physicians were the most common PNC providers, followed by the nurses/paramedics/FWV/FWA. Fifty-five percent of women received Vitamin A or iron tablets during the postpartum visits. In the case of a PNC visit, nearly half of the women took decisions jointly with their husbands. Overall, 15% of women experienced complication(s) during the first six weeks of postpartum.

Child health and nutrition

Among the 682 children recruited in the study, 51% were between 0-1 year, and the rest were between 1-<2 years. Fifty-one percent were male, and the rest were female children. Almost everyone was breastfed, and in the case of 90% of newborns, breastfeeding was initiated within 24 hours of childbirth. Colostrum was given to 92% of newborns, but 29% of children received prelacteals. Honey was the most common pre-lacteal (45% of children who received prelacteals received honey). Overall, 56% of children were given (47% in Mohammadpur, 64% in Mirpur, and 55% in Saidpur) food or drinks within six months. More than half of the women in Mohammadpur (58%) and Mirpur (57%) received breastfeeding information from the physicians, but 74% of women in Saidpur received breastfeeding information from their neighbors. Sixty-nine percent of babies aged 6-8 months got weaning foods (62% in Mohammadpur, 71% in Mirpur, and 76% in Saidpur). *Suji*/*Sagu*/barley/rice powder, egg, and mashed *khichuri* were the most common weaning foods.

Overall, 86% of the new-born received essential newborn care (ENC) in this population. The highest proportion of the new-born receiving any ENC was in Saidpur (98%), and the lowest was in the Mirpur area (80%). Almost every baby was wiped and wrapped with a clean cloth, but for 57% of newborns, cords were tied with sterilized threads (63% in Mohammadpur, 69% in Mirpur, and 50% in Saidpur), and for 61% of the new-borns cord was cut with sterilized blades. Again, the most commonplace of newborn care was public facilities for Mohammadpur, private clinics for Mirpur, and NGO clinics for Saidpur. Moreover, the most common providers for essential newborn care were nurse/paramedics/FWV/FWA (overall, 48%, 42% in Mohammadpur, 49% in Mirpur, and 45% in Saidpur). As per the report of the mothers, 21% of newborns were low-birth-weight. The majority of low-birth-weight newborns were given special care, including wrapping the baby with a clean cloth, frequent breastfeeding, and skin-to-skin care. Twenty-one percent of newborns experienced complications, and 91% of newborns with complications received treatment from health care providers. Care-seeking for newborn complications was decided jointly by the mother and her husband (56% overall, 71% in Mohammadpur, 69% in Mirpur, and 40% in Saidpur). Overall, 80% of children received BCG vaccination (70% in Mohammadpur, 77% in Mirpur, and 96% in Saidpur. Concerning family care indicators, 27% of mothers told stories to their children, and 44% sang songs to their children.

Water, sanitation, and hygiene (WASH)

In Mohammadpur and Mirpur, the main water source was public tap, but in Saidpur, the main source was shared tube well. Nearly three-quarters of the households in the Mohammadpur area (75%) and all of the households in the Saidpur area (100%) enjoyed continuous water supply throughout the day but the water collection time and quality of water are still major concerns. In Mohammadpur, more than half of the participants had to travel >100 feet to collect water (53%). Among the households using tube

well water, more than three-quarters had not tested the tube well for arsenic (75%). In the Mirpur area, only 30% of households had an uninterrupted water supply, and more than one-third of the households received supplied water only in the morning and evening (34%). Overall, 58% of the households mentioned that their water source was shared among more than 15 households. In Mohammadpur (64%) and Mirpur (71%) area, a higher proportion of the households shared water source with >15 households; however, in Saidpur, the water source was shared between 1-5 households in most cases (78%).

Almost all households used a piped sewer system in Mohammadpur (90%) but sewerage connection from city authorities are not available in Mirpur and Saidpur. However, the households dwelling in the Saidpur region used a ring slab with a water seal (53%) and septic tank (39%) more frequently than other types of toilets. Among the households that took part in this study, shared toilets (34%) and communal toilets (26%) were more frequently used, and the proportion was similar across the three study sites. Around half of Mirpur participants (44%) and Saidpur (52%) reported that they shared their toilets with 1-5 households. In comparison, more than half of the households in the Mohammadpur region (52%) had to share their toilets with >15 other houses. Around half of the participants residing in Mohammadpur stated that they had to stay in a queue before entering the toilet (50%), though most participants from Mirpur did not have to do so (60%). In Saidpur, 37% of the participants had to queue sometimes before entering the toilet. Around two-thirds of the households in the Mohammadpur area had a separate compartment for women in the shared/communal toilet (61%), though the majority of the households in Mirpur (56%) and Saidpur (54%) did not have the facility. Most shared or communal toilets (79%) had no arrangement to manage menstruation (e.g., basket, cloth washing facility). Overall, 27% of the households did not have water connection in the toilets; this proportion was highest in Saidpur, where about 53% did not have water connection in toilets.

The study participants from Mohammadpur and Mirpur region commonly washed hands inside or near toilet facility (Mohammadpur: 46%, Mirpur: 52%); however, participants from the Saidpur area usually washed hands outside the yard (70%). Hand washing facilities with water (e.g., tap, basin, bucket, sink) were found available by data collectors in almost all households across the study sites (water supply: 98%, hand washing pot/device: 93%). However, 75% and 71% respondants used soap or other detergent before having meal or baby feeding respectively. Observation findings revealed that most participants from all three study sites used cleaning agents for washing hands after coming from the toilet (soap: 83%, detergent: 16%). However, some participants did not use any cleansing agent for this purpose (15%), and the proportion was higher in Saidpur (23%).

Almost all of the study participants reported that they had a drainage system in their communities (98%), and the drainage system was cemented (pacca) (97%). However, some of the drains were found either blocked and semi- collapsed. Water logging is common; especially during the rainly season. Almost a

third of the study participants reported that there was waterlogging in the drainage system of their community (32%), and the proportion was higher in the Saidpur area (48%).

The majority of the study participants stated that they used the basket for collecting household waste (68%). About 86% of the households dumped waste into a dustbin, and the proportion was highest in Mohammadpur (96%) and lowest in Saidpur (72%). Most of the respondents also reported that they had access to a place for dumping household waste (87%) but removal of waste from the dumping points were not regular. On the other hand, 22% of Saidpur households did not have a place for dumping waste. The majority of the households in the Mohammadpur (53%) and Mirpur (65%) region had to pay for waste management; however, most of the households in the Saidpur region were not required to pay for this purpose (80%).

Almost all of the participants reported that they had soap/liquid soap or detergent in their households, and they washed their hands with soap/liquid soap/detergent and water after coming from the toilet. However, nearly a quarter of the participants reported that they washed their hands only with water before taking food (24%), and the practice was more common in the Saidpur region (26%). Similarly, around one-fourth of the total participants (27%) and one-third of the participants from the Saidpur area (33%) stated that they used only water for washing hands before feeding their children.

Communicable and non-communicable diseases

Overall, 0.7% (n = 5) and 1.0% (n=7) of the respondents (household heads) reported that they had TB, and Chikungunya, respectively, in the preceding one year of the survey date. None of the participants had reported having COVID 19 or Dengue in the preceding year of the survey. The proportion of respondents reporting mosquito killer sprayed in the locality was highest in Saidpur (88%), followed by Mirpur (46%) and Mohammadpur (38%). Overall, the last spray within one month was reported by 25% of households (24% in Mohammadpur, 49% in Mirpur, and 8% in Saidpur).

The household heads reported a high prevalence of hypertension (41% overall, 42% in Mohammadpur, 27% in Mirpur, and 48% in Saidpur), diabetes (12% overall, 15% in Mohammadpur, 13% in Mirpur, and 10% in Saidpur), chronic respiratory diseases (10% overall, 7% in Mohammadpur, 11% in Mirpur and 11% in Saidpur), eye problems (38% overall, 42% in Mohammadpur, 49% in Mirpur and 28% in Saidpur), moderate to severe depressive symptoms (13% overall, 15% in Mohammadpur, 14% in Mirpur and 3% in Saidpur), and moderate to severe anxiety symptoms (10% overall, 17% in Mohammadpur, 10% in Mirpur and 3% in Saidpur). Moreover, a high prevalence of inadequate fruits and vegetable consumption (96% overall, 93% in Mohammadpur, 99% in Mirpur, and 95% in Saidpur), tobacco consumption in any form (20% overall, 19% in Mohammadpur, 18% in Mirpur and 22% in Saidpur), and insufficient physical activity (8% overall, 10% in Mohammadpur, 7% in Mirpur and 5% in Saidpur).

Quantitative findings

Maternal, neonatal, and child health issues and referral

Qualitative exploration with the health care providers (n=11: 7 female, 4 male) revealed that the women sought health care at the late stage of pregnancy and therefore miss the required diagnosis, clinical care, and health education at the early stage. Moreover, undernutrition was common among pregnant women, and therefore, they were in need of dietary counseling and supplements. Still, many pregnant women were willing for home delivery. Apart from obstetrics health issues, reproductive tract infections, irregular menstruation, and gynecological problems were common among women. The common child health issues included diarrhea, common cold, fever, cough, pneumonia, skin infection, loss of appetite, malnutrition, conjunctivitis, worm infections, lack of hand hygiene and cleanliness, drinking of unsafe water, and low-quality baby food. According to the respondents, the existing health facilities could meet the demand for maternal health services. However, there was a lack of health facilities for child health services. Moreover, they expressed the need for door-to-door services for health education on MNCH and WASH issues.

The referral facilities for maternal health problems vary by area (Mohammdpur: Suhrawardy Medical College & Hospital and Dhaka Medical College & Hospital; Mirpur: Suhrawardy Medical College & Hospital and Dhaka Medical College & Hospital; Saidpur: LAMB Hospital, Rangpur Medical College & Hospital, and Rangpur Doctors' Community Hospital). The referral facilities for child health problems also vary by area (Mohammdpur: Dhaka *Shishu* Hospital, Suhrawardy Medical College & Hospital, and Dhaka Medical College & Hospital; Mirpur: Dhaka *Shishu* Hospital, and Dr. MR Khan Shishu Hospital and Institute of Child Health; Saidpur: Rangpur Medical College & Hospital).

Communicable and non-communicable diseases

As per the service providers, the camps in Mohammadpur and Mirpur had many Tuberculosis patients, but the number of Dengue cases was lower than in 2019. Tuberculosis and Dengue were rare in Saidpur. There were also not many COVID-19 patients in the study areas. The respondents opined the need for raising awareness about preventive measures for communicable diseases like removing stored water, cleanliness of the environment, using a mosquito net to prevent dengue fever, hand-washing practice, smoking cessation for Tuberculosis, and wearing a mask to prevent the COVID-19. They also suggested that the community should know about the disease transmission and where to seek health care for these diseases. Moreover, there was a need for free medicine and health care as the cost of care is a crucial barrier. The referral facilities for Tuberculosis, Dengue, COVID-19, and other communicable diseases varied by area of study.

Non-communicable diseases and eye care

The respondents reported that cardiovascular diseases, diabetes, chronic respiratory diseases, renal disease, and cancer are common in all the study sites. The most common cancers include breast and cervical cancer. There are seasonal variations; for example, the number of asthma cases increases in winter. The community usually seeks care from the local drug stores because of the fear of the cost of diagnostic tests. Some of them also visit private chambers of physicians and the out-patient and in-patient departments of various hospitals. They also expressed the need for primary health care centers for non-communicable diseases (NCDs). The referral facilities for NCDs varied by diseases, e.g., cardiovascular diseases, diabetes, chronic respiratory diseases, and cancer, and study area.

Mental health disorders were also common, especially among women. The health care providers also mentioned that the existing mental health issues might be linked to the ongoing COVID-19 pandemic. Moreover, substance abuse was widespread among the young population in the study camps. The people living in Saidpur camps need to travel to Rangpur (a city 42 kilometers away) to see a psychiatrist. Though some services are available for mental health disorders, the respondents expressed the need for comprehensive services for mental health issues. These services could be integrated into the existing primary health care services. A doctor from Saidpur suggested that there should be a position of psychiatrist in the local government hospital. The respondents also expressed the need for awareness-raising on mental health and opined that BRAC and other NGOs could play a role. National Institute of Mental Health and Hospital was the referral center for people in Mohammadpur and Mirpur. For Saidpur, people with mental health problems were referred to the private chambers of the psychiatrists and hospitals in Rangpur and Dhaka.

The common eye problems included conjunctivitis, keratitis, allergic problems, cataracts, and refractive errors, but most people were unable to cover the cost of care. There are eye care facilities available in the cities. Occasionally, free medical camps to treat common eye problems were arranged. However, for the treatment of advanced conditions, they need to go the higher health facilities. The respondents expressed the need for health education on eye health and prevention of eye diseases, e.g., consumption of small fish and vegetables. Moreover, they mentioned that routine eye care for diabetic patients and children's eye care was needed in the community. The referral facilities for eye care differed by study area.

Sexual and reproductive health (SRH) care for adolescent girls

A total of 58 adolescent girls participated in nine FGDs. The most common SRH problems mentioned by them included early pregnancy and childbirth, malnutrition, child marriage, forceful marriage, unwanted pregnancy, lack of awareness on ANC/FP methods/pregnancy termination, menstrual problems (weakness, body ache, lack of concentration, restriction), white discharge per vagina, and violence.

The girls did not have prior knowledge of menstruation before they experience it. They reported the first menstruation primarily to their mothers. In Mohammadpur and Mirpur, most girls used sanitary pads because of the risk of infections and the problem with cleaning and drying cloth. However, in Saidpur, the old cloth is mainly used as they had problems with discarding the sanitary pads. The girls face physical (abdominal pain) and psychological problems during menstruation, and they were restricted from going out and praying.

The unmarried adolescent girls heard about family planning methods but did not have any idea. They believed that FP methods should be started after the first child is born. They also heard about unwanted pregnancies. They also did not know about maternal health care, reproductive tract infections, and sexually transmitted infections. However, some reported rape, humiliation, slapping, beating, and eve-teasing as a form of violence against women. Some of them visited the newly opened BRAC Urban Health Center and were satisfied with the services. The adolescent girls preferred female health care providers. Shyness and financial constraints were identified as barriers to care-seeking. They also expressed the need for SRH clinics inside the camps.

Sexual and reproductive health care for adolescent boys

A total of 57 adolescent boys participated in nine FGDs. The most common SRH problems mentioned by them were masturbation, eve-teasing, anxiety disorders, drug addiction, interest in the opposite sex, wet dreams, watching porn videos, undernutrition, abdominal pain, family and peer conflict, high libido, unintentional injuries, obesity, and depressive disorders.

The respondents were well aware of the physical and psychological changes of puberty but expressed that the experience of a wet dream is uncomfortable, and many of them did not have any idea about it. Many of them talked with their mothers about their physical changes, but a few of them also talked with their fathers. They believe that masturbation is related to loss of intelligence, loss of good health and memory, and development of acne. They also expressed that porn videos encouraged them to masturbate and believed that masturbation would affect their sexual intercourse in later life. They mentioned that physicians were less qualified than the traditional practitioners to perform circumcision. They suggested that to combat porn addiction, young boys should go out with friends frequently, keep themselves busy with their works, and not give mobile phones.

The boys were not aware of FP methods but singled out condoms as the best FP method. They also mentioned abortion as a form of birth control measure. They expressed that there was a lack of educational materials in their school curriculum on sexual and reproductive health and mentioned porn videos as a source of information. Most of them heard about HIV/AIDS but failed to mention any other STIs. None of them reported any sexual violence, abuse, and related sufferings on their part. However, they reported a tendency to cause self-harm because of problems in their love affairs. The respondents talked about several incidents in which adolescent boys became addicted to drugs, deliberately cut their skin, took poison, and even attempted suicidal hanging. Arguments and minor conflicts are common in all nine camps. However, teen-gang violence was reported in the FGD of Mohammadpur Town Hall Camp and Mohammadpur Market Camp. Most of those respondents did not seek consultation or health care for SRH problems.

The barriers to care-seeking for SRH included shyness, discomfort, privacy concern, negative experience with health service providers, offensive smell and unclean health facilities, distance to health care facilities, and poor quality of services. They opined that the doctors should behave well. They expressed the need for better health care facilities at a minimum distance and with minimum cost. Moreover, they mentioned that the health care providers should maintain privacy and be welcoming and empathetic to the adolescent boys. They expressed that the facilities should have both male and female doctors so that the boys can consult with the male doctors, and BRAC should educate the community on sexual and reproductive health and provide guidelines for nutritional needs during pubertal development.

Household solid waste management

The whole household waste management chain can be described in five steps: storage, collection, transport, treatment, and safe uses or disposal. We conducted 9 IDIs to know about the waste management chain. In Mohammadpur, Mirpur, and Saidpur, the households store the solid wastes in bins, buckets, plastic bowls, or polythene bags. In Saidpur, waste is thrown into the drains causing the drains to get blocked. Random throwing of solid waste, irregularity in daily waste collection, and open dustbin in front of households were among the challenges mentioned by the respondents. The respondents mentioned that the use of bins with a lid would make the situation better. Moreover, the community should be made aware of the negative consequences of the mismanagement of solid waste. The study revealed three ways of removing household solid waste from the households: a) a system to collect waste from household level by an assigned person for that locality (mainly in Mirpur); b) a system to dump the household waste by the member of individual households (mainly in Saidpur); and c) both a and b simultaneously (mainly in Mohammadpur).

In Mirpur and Mohammadpur, the common designated dumping place was dustbins (have some structure like wall or container) followed by designated open spots without any boundary or wall. In one of the camps of Saidpur, people started filling up a nearby pond with household solid waste on their own (meaning without seeking permission from the municipality). Shortage of human resources, unavailability of a uniform system, distance to the temporary storage spots, cost of household waste collection, and open storage space were mentioned as challenges for this step. The respondents mentioned that waste collection services should be available to all at a low cost, and well-contained dustbins should be constructed to improve this step.

In Dhaka and Mohammadpur, Dhaka North City Corporation (DNCC) authority collects the solid waste from different dustbins and temporary dumping spots. They emptied the dustbin with garbage cranes or trash pickers and then transported them. In Saidpur, open vehicles (usually pick-ups) from Pouroshova came with several waste management workers or cleaners (employed by the municipality) to empty the big dustbins and collect and transport the solid waste to the final treatment or dumping places. Open vehicles, irregularity of waste collection, and health hazards were among the challenges for this step. Regular collection of waste and ensuring occupational safety were mentioned as ways to overcome the challenges. Waste from Mohammadpur and Mirpur was transported to landfills, and in Saidpur, the final dumping location for the waste is a place called *Bhagar*. The respondents did not have much idea about the final location, treatment, or final disposal of waste.

Fecal sludge management

There are five components of the sanitation value chain or fecal sludge management (FSM) chain: storage, collection, transport, treatment, and safe end-use or disposal of fecal sludge. There were three types of toilets by access status: private (not shared), shared, communal. In Mohammadpur, community/public toilets were cleaned twice weekly by sweepers paid by the community people. This practice was also the case for Mirpur and Saidpur. Most of the respondents reported that they create funds to manage the cost of sweepers by themselves. There was no running water connection in some community toilets, and people must carry water if they intended to use toilets. The current challenges included: i. Many households share community toilets, but none of them are interested in regular cleaning of the toilet; ii. The number of people per toilet is too high; iii. As water source, bathroom and toilet were built side by side within a tiny space; many people use these facilities simultaneously for multipurpose such as toilet, source of drinking water, washing clothes, washing cooking utensils, washing foods, bathing, and washing animals.

In Mohammadpur, most people had toilets connected to the central sewerage system (through Babar Road) of Dhaka city, and hence no need for emptying. In Mirpur, most toilets were “On-site non-storage

- straight to drain/similar": toilets directly connected to surface drains toward local water bodies or local land. Often these drains become fully blocked by solid waste and then overflowed all over the places. OSS toilets involving pits or tanks that can be emptied were the most common toilets in Saidpur. As a result, in Mirpur and Saidpur, the camps get contaminated with fecal sludge when the waste overflowed from the drain, particularly during the rainy season. As cleaning is a shared responsibility, there is a need to raise funds from community people, which causes some delays in the cleaning process.

For the toilets unconnected to drain or sewerage systems, manual emptying was predominately practiced. In contrast, in Saidpur, the community people use mechanical emptying using vacuum tanker/Vaccu-Tag. During manual emptying, waste was being transported by the sweeper to the dumping places after putting those in sacks. However, some private companies and NGOs also operate mechanical Vaccu-Tag at the community level for emptying septic tanks. The current challenges include the high cost of emptying services and the health hazards of the persons involved with the emptying process.

With a flawed sewage system and no treatment of fecal sludge coming from latrines, most fecal sludge ends up in the open environment untreated - polluting the soil and surrounding waterways. There is no dumping site designated for fecal sludge in any of the three study sites. It is a great environmental concern that collected sludge was not managed in an environmentally safe way in most cases. Although collected sludge often goes into the open, most people stated that they are aware of its negative consequences (contaminates water, affects human health and environment in general).

INTRODUCTION

Bangladesh has experienced continued growth in the macroeconomic variables, which encompasses the demand-side determinants of healthcare services, e.g., per capita gross domestic products (GDP), infrastructure development, literacy rate, food security, life expectancy, sanitation facilities, etc. Also, the rate of urbanization and accompanying growth of urban slums meant an ever-growing urban population as well as urban slum-dwellers.

The current situation in Bangladesh is not similar to what the developed countries of the world experiencing when they were undergoing the initial stages of urbanization. Furthermore, in Bangladesh, only one city, Dhaka, is primarily bearing the burden of the ever-growing magnitude of the urban population. In Bangladesh, because the population is large, the sheer number of people coming into Dhaka is unprecedented. The social costs of progressive overloading of housing and social services, not to mention increased crime, pollution, and congestion, are already outweighing the productivity of the increased population.

The rapid growth of the urban population is one of the stylized facts of the Bangladesh economy as of most developing societies. Evidence shows a staggering increase in urban population- from 1951 to 2011, and it has increased by about 18 folds.1Some estimates show that the urban population constitutes about 30% of the total population. By 2050 it will constitute 50% of the total population 2. The number of households in the urban slums has increased concomitantly. In Bangladesh, the total population of the six major cities is 16.8 million, and the total slum population is 5.4 million. One million slum households are living in 9000 slum clusters. The population density in slums is about 200000/sq km. Slums, as defined by the United Nations agency UN-HABITAT, are run-down areas of a city characterized by substandard housing and squalor and lacking in tenure security. Slums are also characterized as being heavily populated.

Due to the rapidly growing population in the incessantly growing urban slums, there has been an alarming rate of growth of communicable and non-communicable diseases in these slums (1,2). The inhospitable and almost unhygienic environment of these slums sometimes works as an accelerant to the spread of diseases. Though Bangladesh has witnessed remarkable progress over the last few decades in health and population indicators, significant disparities exist within urban areas between slum and non-slum-dwellers. According to the Multiple Indicator Cluster Survey (MICS), the health indicators of slum residents are among the worst in the nation, with an under-five mortality rate is 95 per 1000 live births compared to 66 per thousand live births in rural areas, and skilled birth attendants attend only 15% of these births. Diarrhea prevalence is also twofold greater among slum-dwellers than the rest of the population (3).

A study conducted by Save the Children (UK) on health problems in urban slums of Bangladesh reported gastric pain, dysentery, skin diseases, diarrhea, pain, general weakness, jaundice, menstrual problems and anemia amongst females, and fever, cough, pneumonia, measles amongst children, as the most common health problems prevailing in the region. Non-qualified allopathic drug-sellers of drug stores located within and nearby the slums were found to be the main source of health care for slum dwellers. Even in the presence of qualified practitioners, their services are not availed due to their inability to pay consultation fees. Thus, it becomes clear that slum dwellers of the urban areas of Bangladesh are one of the most deprived groups in terms of accessing and enjoying proper health care facilities. However, Very little research has been undertaken on healthcare demand in developing countries, and even less that focuses on the poor, especially the urban poor. A recent study on demand for Health Care among urban slum residents in Dhaka, Bangladesh, concluded that urban health systems in Bangladesh must work to improve access to care by the poor.

One-third of the population (34%) lives in urban areas of Bangladesh, among which 55% of the urban population in 2014 have been leading a miserable life with poor living standard and inadequate facilities of drinking water, sanitation, education, health, drainage, and waste management. Insufficient access to water and sanitation facilities, including poor hygiene practices, increases the burden of communicable disease, morbidity, malnutrition, and even death, especially in urban slums. Thus to reduce the burden, BRAC urban development programme (UDP) will intervene in Slum of Mohammadpur and Mirpur areas of Dhaka city and Saidpur municipality of Nilphamari district. As BRAC WASH strategy is to ensure WASH for everyone, everywhere, all the time, thus we have taken this opportunity of working on the deprived and destitute people of the Slum community. The objective of this project is to analyze the need and provide hardware as well as software services concerned with water supply, sanitation, hygiene, drainage, and waste management for the Slum dwellers

Accordingly, BRAC UDP is implementing a program titled '**The Integrated Health, Water, Sanitation and Hygiene Services Under the Rehabilitation Program for Upliftment of Ultra-Poor Slum Dwellers in Mohammadpur and Mirpur in Dhaka City and Saidpur in Nilphamari District in Bangladesh**.' As evident in the project name, the program aims to improve health and nutrition status and WASH facilities and services in selected slums of Mohammadpur, Mirpur, and Saidpur, the dwelling places of low-income people. This study aimed to assess the baseline status of maternal health, child health, non-communicable diseases, communicable diseases, and WASH services and practices.

METHODOLOGY

Objectives of the study

Overall: The overall objective of this baseline assessment was to report the current situation of health and WASH services and practices among ultra-poor slum-dwellers in Mohammadpur, Mirpur, and Saidpur.

Specific:

- To assess household socio-economic status, food security, and water, sanitation, and hygiene facilities and practices
- To assess the status of solid waste and fecal sludge management systems
- To assess the current status of maternal and child health and nutrition service utilization, including antenatal care, delivery care, postnatal care, newborn care, breastfeeding, infant and young child feeding practices, immunization, prevalence and treatment of common childhood diseases, home environment
- To determine the status of access to services aimed at communicable diseases including Tuberculosis
- To report the current situation of NCDs and their behavioral risk factors and access to eye care
- To report the need and care-seeking practices for sexual and reproductive health by the adolescents
- To develop an understanding of the referral network for MNCH, communicable diseases, and non-communicable disease care

Study design, study site, and study population

To assess the baseline status of the above-mentioned project of BRAC UDP, we conducted a mixed-method study comprising quantitative and qualitative components among low-income people of Dhaka and Saidpur. The study was carried out in selected clusters of the slums of Mohammadpur and Mirpur areas of Dhaka City Corporation and Saidpur town of Nilphamari district. Table 1.1 below shows the approximate number of area-wise households and population in these three areas.

Table 1.1: Household and population status in UDP project areas of Dhaka and Saidpur

Area	#Slums	#Households	~Population
Mohammadpur	6	10,720	76,300
Mirpur	40	14,333	71,665
Saidpur	31	10,004	50,020
Total	77	35,057	1,97,985

The study population included the following groups:

1. Women who gave birth to a live baby in the two years preceding the date of the interview
2. Head of the households
3. Solid Waste/sanitation entrepreneurs
4. Adolescents
5. Health service providers

Study variables

We collected data on the following variables from the population groups and health facilities mentioned above. The following Table outlines the broad categories of variables by population groups.

Table 1.2: Broad categories of variables included in data collection

Population group/other	Broad categories of quantitative variables	Qualitative exploration
Household head	Socio-economic status, education, asset, WASH facilities, hygiene practices, care-seeking for communicable, e.g., TB and vector-borne diseases and non-communicable diseases	
Women who gave birth to a live baby in the past two years	ANC and birth preparedness, delivery care, postnatal care, essential newborn care, breastfeeding and other IYCF practices, childhood illnesses, health-seeking behavior for maternal and child complications, child care practices, family care indicators, immunization, WASH practices	
Waste/sanitation entrepreneurs		• Status of collection, transportation, and treatment of solid/fecal wastes
Adolescents boys and girls		• Care seeking for sexual and reproductive health-related conditions
Health service providers		• Referral network for MNCH, communicable diseases, and non-communicable disease care

Sample size and sampling techniques

Quantitative

As the current status of the study variables was largely unknown, we assumed p=.5, α=0.05, d=0.05, DE=1.5, and 10% non-response rate. Therefore, we required 640 subjects for each of the three population groups (household head, <2 years old children, and their mother). We carried out a mapping exercise and ranked the camps in descending order based on its' approximate population size. We divided the camps into clusters with about 200-250 households, and afterward, we randomly select 31 clusters from the slums. We allocated the number of clusters proportionately based on the population size of each of the three areas. We selected 11 clusters from Mohammadpur, 12 from Mirpur, and eight from the Saidpur area. Form each cluster, the data collector(s) started listing the household and its' members from a certain point of the cluster and searched for the households with at least one child aged <2 years. If she found a household with <2 years and she stopped and obtained consent to enroll the child, child's mother, and the respective household head. If any household had more than one child aged <2 years, the youngest of them, her/his mother, was selected and requested to participate in the study. We finally collected data from 682 households.

Qualitative

To understand the status of collection, transportation, and treatment of solid/fecal wastes, we conducted in-depth interviews (IDI) with the waste/sanitation entrepreneurs. We selected 3 clusters from each of the three study areas based on the data collected in the quantitative part. We conducted 1 FGD with adolescent boys and 1 FGD with adolescent girls in each of the nine selected clusters to explore the sexual and reproductive health needs of the adolescent girls and boys. To better understand the referral network for MNCH, communicable and non-communicable disease care, we carried out 12 IDIs, at least one from each of the selected clusters, with the health service providers providing primary health care to the study population. We also carried out 9 IDIs with WASH entrepreneurs managing waste disposal in the areas, one from each selected cluster.

Training and standardization

Data collectors for the quantitative part received a 5-day training on the household listing and data collection through a face-to-face interview. They had also undergone 2-day field practices and 1-day of review sessions based on the findings during field practices. The conductors of IDI and Focus Group Discussions (FGD) also received the necessary training and refresher for qualitative data collection.

Data collection and quality control

Quantitative

Quantitative data was collected using a pre-tested structured questionnaire comprised of the questions tested in different studies in Bangladesh and elsewhere. The questionnaire was developed in English and translated into Bengali (local language). A programmer converted the questionnaire to the format of an Open Data Kit (ODK). We used an online data collection platform named KoboToolbox (https://www.kobotoolbox.org/) to collect and store data throughout the study. Data collectors, statisticians, and investigators had password-protected user account(s) to see, use and upload the data collection forms. Highly trained data collectors/research assistants, recruited and trained locally, collected data by visiting the households of the selected participants. Field officers/supervisor/research associate/investigators were responsible for field supervision, day-to-day management of data collection, and any necessary troubleshooting. Pretested guidelines were used in conducting FGDs and IDIs for qualitative data collection.

Field coordinators directly observed a certain percentage of interviews and provided feedback if any issues were found. The principal investigator (PI) and other investigators of the study visited data collection activities several times and later arranged a refresher training based on the field visit findings. A statistician was assigned for interim analysis of the data and to send the data queries to field coordinators as soon as those were identified.

Qualitative

As discussed above, we applied qualitative approaches to develop an understanding of the referral network for maternal, neonatal, and child health (MNCH), communicable diseases, and non-communicable disease care to report the need and care-seeking practices for sexual and reproductive health by the adolescent boys and girls; and to outline the solid and fecal waste management chain the study areas. Hence, this section describes the findings from in-depth interviews (IDIs) with health care providers and waste/sanitation entrepreneurs and focus group discussions (FGDs) with adolescent girls and boys.

A total of 18 in-depth interviews (IDIs) and 18 focus group discussions (FGDs) were planned to address the study objectives from the qualitative part of this study. Finally, 20 IDIs (IDI with two additional health care providers) and 18 FGDs were conducted. **Table 1.3** displays the numbers and categories of qualitative respondents by study area. The distribution of the IDIs and FGDs across the three study sites was nearly equal, ranging from 12 to 13.

Table 1.3: Distribution of the number of qualitative components (FGDs and IDIs) by study sites

Respondents	Mohammadpur	Mirpur	Saidpur	Overall
Health care providers (HCP)	4	3	4	11
Adolescent girls (age 10-19 years)	3	3	3	9
Adolescent boys (age 10-19 years)	3	3	3	9
Waste/sanitation officer/ entrepreneur or worker	3	3	3	9
Total	13	12	13	38

Data Analysis

Quantitative

Data was downloaded, labeled, and cleaned by a senior statistician at the end of the survey. We carried out descriptive analysis for the continuous and categorical variables under the quantitative component. We presented data in tables, graphs, and flowcharts wherever it is suited. We also performed uncertainty analysis and reported 95% confidence wherever it was necessary. All quantitative analyses were conducted using the statistical software Stata version 17.0 (StataCorp LLC, College Station, TX, USA).

Qualitative

Verbatim transcription was done for all FGDs and IDIs. Then, each transcript was coded deductively and inductively. Thematic analysis was done under broader themes for each component (WASH, SRH, and Referral Network). Intersectionality analysis was done for each theme according to gender, age, and socio-economic status.

Ethical considerations

We obtained ethical clearance from the Institutional Review Board (IRB) of the BRAC James P Grant School of Public Health, BRAC University, Dhaka, Bangladesh (IRB Reference No.: IRB-3 January'21-001). At the beginning of each interview, the data collectors gave detailed information about the objective of the study. They assured the participants that their participation would be entirely voluntary and that respondents had the right to refuse to answer any questions and to discontinue the interview at any time, even after consenting to the study. Afterward, informed written consent was obtained from each respondent or their legal guardian before collecting data.

Challenges

The team faced several challenges during the data collection activities of the area. One of the major challenges throughout the entire data collection time was the COVID 19 situation in Bangladesh. In

Bangladesh, the second wave of the COVID-19 pandemic started just before we started data collection. After few days of data collection, the government imposed several restrictions on non-essential transports. However, we have overcome that with the dedication of the field team members and the cooperation from the BRAC UDP team working in the area. Although our data collectors and their supervisors took precautionary measures such as wearing double masks, washing hands, and/or applying sanitizers as often as possible, two of our team members were diagnosed positive in COVID 19 test and were off for several weeks. Another challenge was the timing of the data collection, as the month of Ramadan started soon after we began data collection activities. People use to sleep longer in the mornings in the selected areas, and hence the data collectors could not start their daily activity before 10 AM. Another challenge was that many of the households (15%) were either locked, no respondent was found to provide the necessary information, or refused to provide information during household visits to collect membership information.

RESULTS: HOUSEHOLD CHARACTERISTICS

Demographic information

Data collection of the Baseline survey of the BRAC UDP programme was conducted in March-April 2021. Out of 77 camps, data were collected from 31 randomly selected clusters in 22 camps of Mohammadpur, Mirpur, and Saidpur study sites. Information on socioeconomic status collected in this survey provides the contexts to interpret demographic, health, and nutrition indicators. This chapter includes household membership, household building materials, education, occupation, food security, wealth index, household income status.

The data collectors visited a total of 4,970 households. However, 747 households were either locked or without anyone to provide necessary information or refused to provide any information. Accordingly, data collectors recorded membership information from 4,223 households according to the age groups shown in **Table 2.1**.

Table 2.1: Household members according to age groups by study sites

Age group	Population summary			
	Overall (%)	Mohammadpur	Mirpur	Saidpur
Households visited	4,970	1,742	1,979	1,249
Households with membership information*	4,223	1,380	1,623	1,220
Population	12,527	4,239	4,679	3,609
<2 years old children	791(6.3)	293(6.9)	291(6.2)	207(5.7)
2-4 years old children	1,135(9.1)	410(9.7)	420(9.0)	305(8.5)
5-9 years old children	1,430(11.4)	539(12.7)	524(11.2)	367(10.2)
10-14 years old adolescents	1,566(12.5)	517(12.2)	579(12.4)	470(13.0)
15-19 years old adolescents	1,538(12.3)	481(11.3)	598(12.8)	459(12.7)
20-49 years old adults	4,012(32.0)	1,335(31.5)	1,540(32.9)	1,137(31.5)
50-59 years old adults	1,083(8.6)	357(8.4)	368(7.9)	358(9.9)
60+ years old elderly	972(7.8%\)	307(7.2)	359(7.7)	306(8.5)

*Rest of the households were locked/no respondents to provide information/refused to provide an answer.

The data collectors found 791 children aged <2 years in these households. According to the age groups, 6.3% of the total population in the listed households were children aged <2 years, 9.1% were children aged 2-4 years, 24.8% were adolescents aged 10-19 years, and 7.8% were elderly people aged ≥60 years. About 45% of the population was aged 20 to 59 years. The proportion of <2 years old children was highest in Mohammadpur and lowest in Saidpur area. However, the proportion of elderly people

were highest in Saidpur and lowest in the Mohammadpur area. Females headed about 28% of the households in the study areas, and 99% of the families were Muslim.

Figure 2.1 below demonstrates the average household size in the three study areas. Overall, the average household size in the study areas was 4.4, which was slightly higher than the average national household size estimated in Bangladesh Demographic and Health Survey 2017-2018. The average household size was highest in the Mohammadpur area (4.7) compared to 4.3 in Mirpur and Saidpur areas.

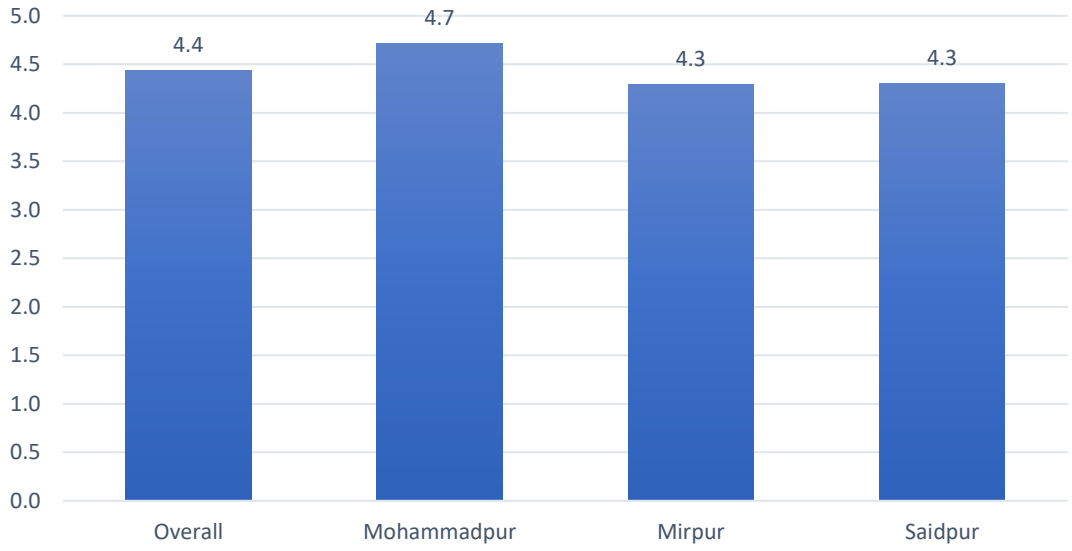


Figure 2.1: Average household size (members/household) by study site

Educational attainment

Information on educational status was collected from the household heads and the mothers of 2 years old children. The educational attainment of the participants was categorized into five groups: 1) no formal education; 2) partial primary (1 to 4 years of schooling); 3) primary completed (5 years of schooling); 4) partial secondary (6 to 9 years of schooling); 5) Secondary school certificate or above (10 or more years of schooling). Overall, about 30% of the household heads had no formal education, while 9% completed the secondary school certificate examination or went beyond that (**Figure 2.2**). The proportion of household heads with no formal education was highest in the Mohammadpur area (33%) compared to 28% in both Mirpur and Saidpur areas. However, the proportion of household heads with 10 or more years of education (SSC or above) was highest in the Saidpur area (16%) compared to 8% and 6% in Mohammadpur and Mirpur areas.

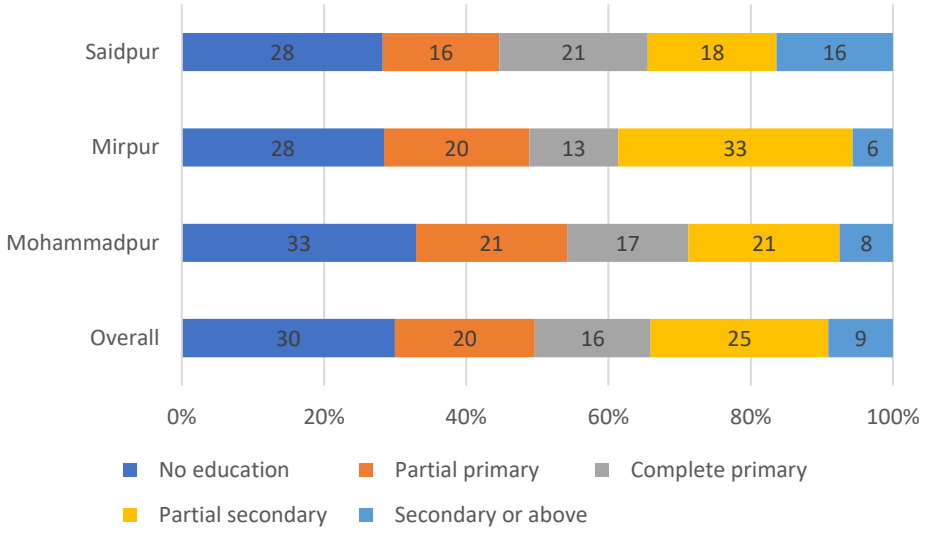


Figure 2.2: Educational attainment of the household heads by study sites

Major household features

Though we calculated wealth quintiles using the household assets and other socio-economic data, below, we listed some of the major features of the households considering programmatic importance. According to the data, about 79% of the households of study areas had a radio or television, and 97% had a telephone or mobile phone. Regarding cooking fuel, 59% of the households use electricity for cooking: highest in Mirpur area (78%) and lowest in Saidpur area (42%). Only 10% of the households used LPG, and 5% of the households had piped natural gas. However, about 14% of the households used solid biomass fuel, and 12% of the households use kerosene as the primary fuel for cooking. While the use of kerosene as the primary cooking fuel is highest in Mohammadpur (30%), about 43% of the households in the Saidpur area used solid fuel for household cooking, which is much higher than the other two areas.

Regarding household building materials, the exterior wall of 96% of households was cemented, which was highest in Mohammadpur (~100%) and lowest in Saidpur (88%). Roofs of 54% of households were cemented, and 44% of households had a tin roof. The proportion of households with cemented roofs was highest in Mohammadpur (90%) and lowest in Saidpur (7%). Approximately nine out of 10 household roofs in Saidpur were made from tin. Overall, about 94% of households had cemented floor, which is highest in Mohammadpur (~100%) and lowest in Saidpur (81%). About 5% of overall and 18% of the households in the Saidpur area had the floor made from earth/sand. **Table 2.2** below provides more details on household characteristics of the enrolled <2 years old children and their mothers.

Table 2.2: Major features of the household across the study sites

Features	Overall	Mohammadpur	Mirpur	Saidpur
	N=682	N=240	N=265	N=177
Radio/Television ownership	78.7	81.3	80.7	72.3
Telephone/Mobile telephone ownership	97.4	96.7	98.1	97.2
Type of primary cooking fuel				
Electricity	59.0	51.3	77.7	41.8
LPG	9.7	8.8	11.0	9.0
Piped Natural gas	5.3	9.2	5.3	0.0
Kerosene	12.2	30.0	4.2	0.0
Charcoal	1.3	0.0	0.0	5.1
Wood	10.4	0.4	0.4	39.0
Straw/grass/agricultural waste/leaves	1.6	0.4	1.5	3.4
Animal dung	0.4	0.0	0.0	1.7
Building material of exterior wall (%)				
Bamboo with mud	0.7	0.0	0.0	2.8
Tin	3.1	0.4	1.5	9.0
Cement	96.2	99.6	98.5	88.1
Building material of roof (%)				
Wood Planks/wood	1.4	0.4	1.2	3.4
Tin	44.2	9.6	45.1	89.8
Ceramic Tiles	0.3	0.0	0.8	0.0
Cement	54.2	90.0	53.4	6.8
Building material of floor (%)				
Earth/Sand	4.7	0.0	0.4	17.5
Ceramic Tiles	1.2	0.0	1.9	1.7
Bricks/ Cement	94.0	99.6	97.7	80.8
Mosaic	0.2	0.4	0.0	0.0
Number of rooms per household				
1 room	65.4	63.3	71.6	58.8
2 rooms	23.5	23.8	22.4	24.9
3 rooms	7.9	7.9	4.9	12.4
4 or more rooms	3.2	5.0	1.1	4.0
Number of persons per room*	4 (3, 5)	4 (3, 5)	4 (3, 4)	3 (3, 5)
Household income*	10000 (7500, 15000)	10500 (9000, 15000)	10000 (8000, 14000)	8000 (6000, 12000)

*Median (Interquartile range)

Occupational status

Occupational status of the household heads and the mothers of the <2 years old children enrolled in the study was collected and categorized into 1) unskilled day laborer (daily or contract wage labor that does not require training); 2) skilled day laborer (labor that requires formal or informal training); 3) transport sector (transporting goods or people); 4) salaried worker (employed and drawing a regular wage); 5) business (trade in any goods, including petty trading); 6) no-income; 7) homemaker and 8) others. Table 2.3 below shows the distribution of occupational status of the head of households. According to the data, 31.9% of the household heads were homemakers, 12.5% were salaried individuals, and 12.1% had businesses. **Table 2.3** provides more details on the occupational status of the household heads.

Table 2.3: Occupation of the household head by study sites

Occupation	Overall	Mohammadpur	Mirpur	Saidpur
Unskilled day laborer	5.6	1.0	5.9	16.7
Skilled day laborer	9.5	2.9	10.6	23.8
Transport	6.9	5.7	8.2	7.1
Salaried	12.5	9.5	17.7	9.5
Business	12.1	14.3	4.7	21.4
No income	2.6	2.9	3.5	0.0
Homemaker	31.9	37.1	37.7	7.1
Others	19.0	26.7	11.8	14.3

Wealth Quintile

We divided the households into five wealth quintiles based on the household characteristics such as cooking, water, and sanitation system as well as the assets owned by the households using the Demographic and Health Survey (DHS) method (4). We then compared across the study sites with the overall wealth quintile. **Table 2.4** displays the wealth quintiles of the households by study sites.

Table 2.4: Wealth quintiles of the households by study sites

Wealth quantiles	Overall	Mohammadpur	Mirpur	Saidpur
Least wealthy (Q1)	20.1	6.7	8.0	56.5
Lower (Q2)	20.1	16.7	25.0	17.5
Middle (Q3)	19.8	29.6	22.0	3.4
Upper (Q4)	20.0	24.2	26.1	5.1
Wealthiest (Q5)	20.0	22.9	18.9	17.5

Food security and coping strategies

We collected information on food security status and coping strategies of the households of the enrolled <2 years old children. **Figure 2.3** shows the distribution of households by food security status. Overall,

40.0% of the households were food secured in the preceding four weeks of the survey. However, the percentage of food secured households was highest in the Mohammadpur area (45%) and the lowest in the Mirpur area (34%). Overall, 27% of the households had severe food insecurity. The proportion of severe food insecurity was highest in Mohammadpur areas (30%) and lowest in the Saidpur area (20%). The proportion of severe food insecurity is higher than that reported from the slum data of the Food security and nutrition surveillance round 2018-19 (19%) (Unpublished data, FSNSP 2018-19).

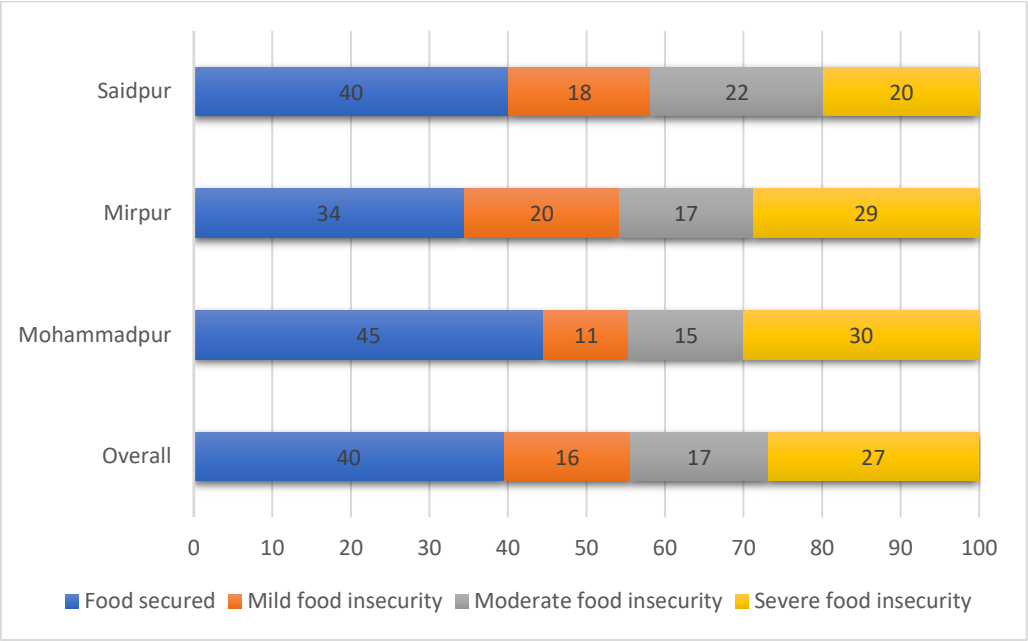


Figure 2.3: Household food security status by study sites

Figure 2.4 shows the proportion of household relied on socially unacceptable or unsustainable means to obtain food. According to the data, about half of the households took loans, and more than one-fifth of the households borrowed food.

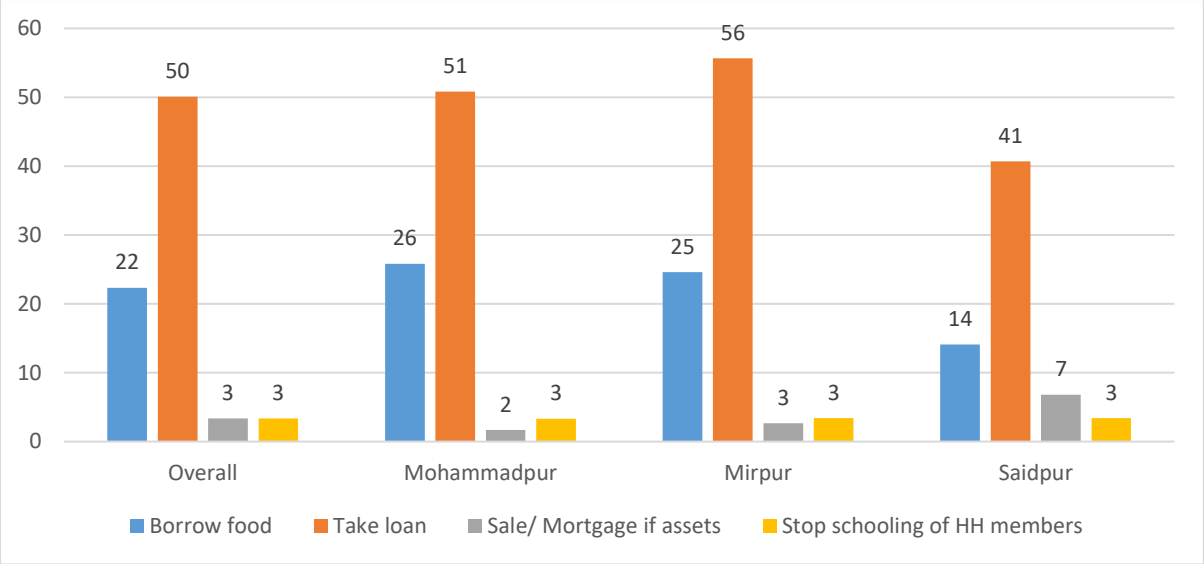


Figure 2.4: Household adopting unsustainable means to cope with hunger or shortage of food

RESULTS: MATERNAL HEALTH STATUS

The health care services that a woman should receive throughout the pregnancy, delivery, and postpartum period are crucial for the survival and well-being of the woman herself and her offspring. This section provides information on antenatal care, delivery care, postpartum care, and neonatal care of the mothers of <2 years old living in the low-income settlements in Mohammadpur, Mirpur, and Saidpur areas of Bangladesh.

Basic characteristics and reproductive history

Table 3.1 below shows some characteristics of the women enrolled in the survey. We enrolled 682 children aged <2 years and their mothers as well as respective household heads. The median age of the mothers enrolled in our survey was 24 years, and 75% were under 28 years. About 31% of the enrolled mothers had no formal education, with 8.5% of them completed ten or more years of schooling. Approximately 88% of the mothers were homemakers, with a few (~2%) reported themselves as salaried persons.

Table 3.1: Basic characteristics of the participating women

Traits	Overall	Mohammadpur	Mirpur	Saidpur
	N=682	N=240	N=265	N=177
Age in years (median with IQR)	24(20,28)	25(21,28)	23(20,26)	25(21,31)
Currently married (%)	98.5	98.3	98.5	98.9
Educational status (%)				
No education	31.0	34.6	29.2	28.8
Partial primary	22.5	26.3	22.4	17.5
Complete primary	13.4	11.3	11.0	19.8
Partial secondary	24.7	21.3	32.2	18.1
Complete SSC or more	8.5	6.7	5.3	15.8
Occupation (%)				
Unskilled day laborer	0.7	0.4	0.4	1.7
Skilled day laborer	1.0	0.0	1.1	2.3
Transport	0.2	0.0	0.4	0.0
Salaried	1.8	1.7	2.3	1.1
Business	0.3	0.4	0.4	0.0
Homemaker	87.7	87.5	86.0	90.4
Others	8.4	10.0	9.4	4.5
Age at menarche in years (median with IQR)	13(12,13)	13(12,13)	13(12,13)	13(12,13)
Currently menstruating (%)	76.1	79.9	81.1	63.3
Number of pregnancies* (median with IQR)	2(1,3)	2(1,3)	2(1,3)	2(1,3)
Number of live births (median with IQR)	2(1,2)	2(1,2)	2(1,2)	2(1,3)

*Including miscarriage, MR, and abortion; IQR: Interquartile range

Menstrual hygiene

Reproductive and menstrual ill health is a burden among the women in Bangladesh, especially the women in the urban slums. A good hygiene practice during menstruation is essential for every woman, not only due to their health concerns but also for their reproductive life. Of the menstruating mothers, more than 53% used sanitary pads, and 43% used old clothes. Among the study sites, the highest proportion of mothers using sanitary pads was in Mirpur (61%), and the lowest was in Saidpur (40%). **Figure 3.1** shows comparisons of menstrual hygiene practices among the study sites.

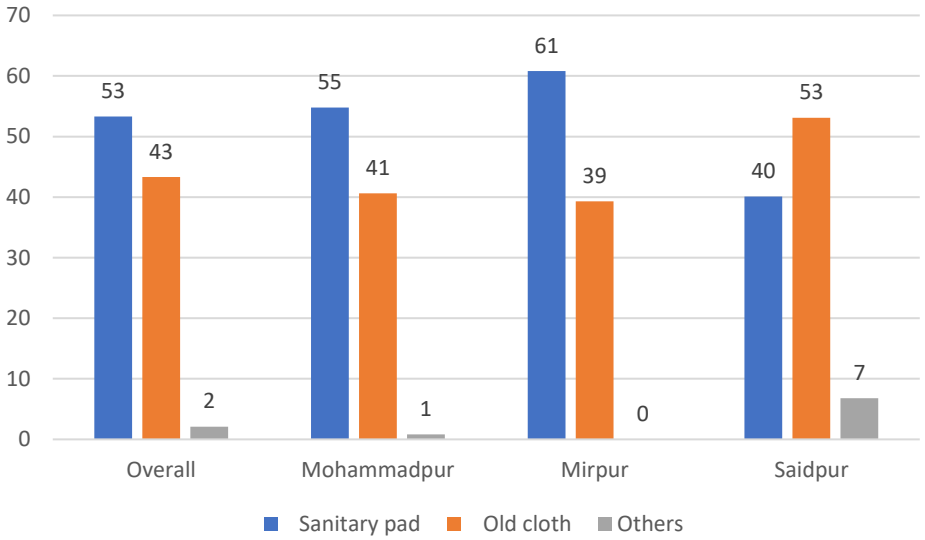


Figure 3.1: Materials used at the time of menstruation among the mothers of <2 old children.

Family planning

Status of family planning

Family planning can help women to avoid unintended and unplanned pregnancies and reduces the risk of unsafe abortions. Contraceptives also help women space the births of their children, which directly benefits the health of both the mother and their children. **Figure 3.2** below demonstrates the proportions of couples using at least one method of family planning across the study sites. About 78% of the women were using at least one family planning method. Among three areas, the proportion of using any method of family planning was highest in the Mirpur area and the lowest in the Saidpur area.

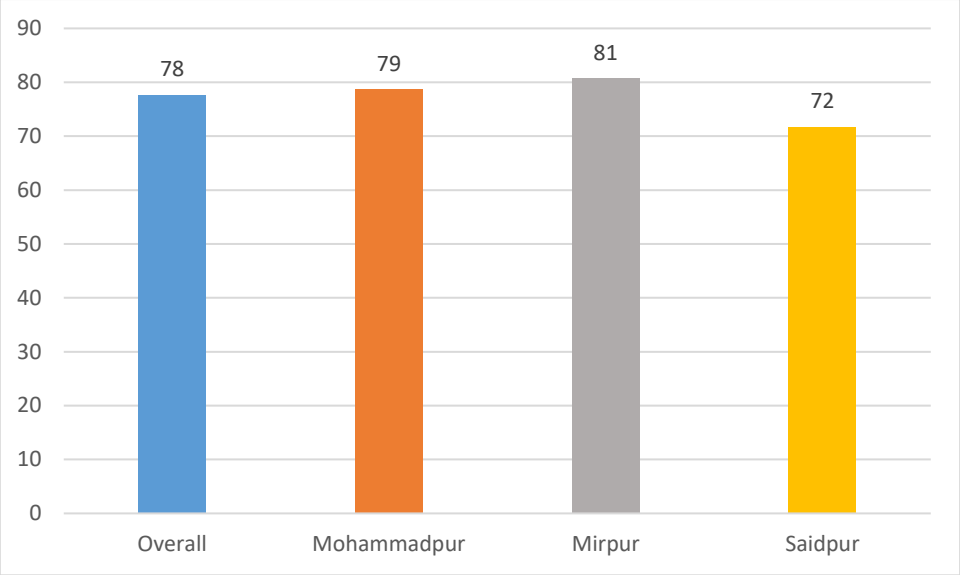


Figure 3.2: Women or their husbands using any family planning methods

Reasons for not using family planning

According to data, about 22% of the enrolled women said that she or her husband was not using any family method at the time of the survey. **Table 3.2** below listed the reasons for not using any family planning. Among those not using any family planning method, about 39% were in lactational amenorrhea, i.e., they did not menstruate yet after delivery. About 8% of the women were not in a partnership (widow, divorced, abandoned, separated), and 5% were currently pregnant at the time survey.

Table 3.2: Reasons for not using any family planning method by study site

Reasons	Overall	Mohammadpur	Mirpur	Saidpur
Not in a partnership widow/ divorced/abandoned/separated	7.9	11.8	9.8	2.0
Currently pregnant	5.3	0.0	5.9	10.0
Did not menstruate after delivery	38.8	37.3	39.2	40.0
Wants children	5.3	0.0	9.8	6.0
Doesn't know how to use	2.0	3.9	2.0	0.0
Opposition from husband	3.3	5.9	2.0	2.0
Side effects	3.3	5.9	0.0	4.0
Prohibited in religion	0.7	0.0	0.0	2.0
Others	33.6	35.3	31.4	34.0

Methods of family planning

Types of methods used by the women or their husbands reported are listed in **Table 3.3** below. The condom was reported as the most used method of family planning in the low-income settlements of the selected areas of Dhaka and Saidpur. About 31% of the women said their husbands use condoms during sexual intercourse, with the highest 37% in the Mirpur area and the lowest 26% in the Saidpur area. However, In the Saidpur area, pills are the most common method of family planning. About 37% of the women in Saidpur camps take pills, while the overall percentage of pill use is 25%. About 21% of the women reportedly use the injection method. Among other methods, Norplant, copper T/IUD, withdrawal methods were reported by about 8%, 5%, and 4% of the women, respectively.

Table 3.3: List of methods used by the women or their husband (Multiple responses)

Type of method (%Yes)	Overall	Mohammadpur	Mirpur	Saidpur
Pill	25.1	17.0	25.2	37.0
Condom	30.8	27.1	36.9	26.0
Injection	21.4	23.4	17.3	25.2
Copper T/IUD	5.1	9.6	2.3	3.2
Norplant/ subdermal implant	8.1	12.8	8.4	0.8
Emergency contraceptive pill	0.0	0.0	0.0	0.0
Ligation/ tubectomy	0.0	0.0	0.0	0.0
Vasectomy	0.0	0.0	0.0	0.0
Safe period	0.8	1.1	0.5	0.8
Withdrawal	4.2	4.3	6.1	0.8
Lactational amenorrhoea	0.6	1.1	0.5	0.0
Others	1.0	0.0	1.4	1.6

Places and providers of family planning services

Table 3.4 listed the facilities or places where the women or their husbands received family planning service last time. In the low-income settlements of Dhaka and Saidpur, most of the women and their received family planning services from the Pharmacy. Overall, about 51% of the women or their husbands received family planning services from the pharmacy. Among the three sites, the highest number of women who received family services from the pharmacy was in the Mirpur area (67%), and the lowest was in Mohammadpur (36%). About 39% of the women in the Mohammadpur area received family planning services from the maternal and child welfare center (Mohammadpur fertility center). About 15% and 5% of the participants received services from NGOs and private facilities, respectively.

Table 3.4: Facilities – sources of family planning services

Place of Family Planning services (%Yes)	Overall	Mohammadpur	Mirpur	Saidpur
Government medical college & hospital	1.2	1.8	0.8	1.1
Government specialized hospital	0.0	0.0	0.0	0.0
District hospital	0.0	0.0	0.0	0.0
Upazila/thana health complex	0.2	0.0	0.4	0.0
Maternal & child welfare centre MCWC	13.6	38.9	0.0	0.0
Private medical college & hospital	0.0	0.0	0.0	0.0
Private clinic	4.7	3.5	6.8	3.4
NGO hospital/clinic	14.5	7.9	13.2	25.1
Specialized physician's chamber	0.0	0.0	0.0	0.0
Pharmacy	50.8	36.2	66.5	47.4
Don't know	3.5	2.2	1.6	8.0
Can't remember	0.3	0.0	0.0	1.1
Others	12.4	11.8	11.2	14.9

In the selected study areas, the highest number of women or their husbands received family planning services from medicine sellers, 51%. About 16% of the women or their husbands received family planning services from physicians (specialized or MBBS), 16% from nurses, paramedics, or similar government providers, and 3% from NGO workers.

Table 3.5: Provider of family planning services

Providers/individuals (%Yes)	Overall	Mohammadpur	Mirpur	Saidpur
Specialized physician	5.2	10.5	2.0	2.9
MBBS Doctor	10.4	18.3	6.8	5.1
Nurse/paramedic/FWV/FWA	16.0	21.4	8.4	20.0
BRAC Shasthya Shebika	1.1	0.0	2.4	0.6
BRAC Shasthya Karmi	1.1	0.9	2.0	0.0
NGO Health Worker	3.4	3.5	4.0	2.3
Traditional trained birth attendant (TTBA)	0.5	0.9	0.4	0.0
Trained birth attendant (TBA)	0.2	0.4	0.0	0.0
Village doctor	0.2	0.0	0.0	0.6
Homeopath	0.0	0.0	0.0	0.0
Medicine seller	50.7	36.7	66.1	46.9
Pusti apa (CNO/CNP)	0.0	0.0	0.0	0.0
Kabiraj	0.0	0.0	0.0	0.0
Pir/fakir	0.0	0.0	0.0	0.0
Don't know	4.6	3.1	2.0	10.3
Can't remember	0.0	0.0	0.0	0.0
Others	9.3	8.7	7.2	13.1

However, receiving family planning services from specialized or MBBS doctor is highest in the Mohammadpur area (29%) and lowest in the Saidpur area (8%). Receiving family planning services from medicine sellers is highest in Mirpur areas and lowest in Mohammadpur areas. In the study sites of Dhaka and Saidpur areas, nobody went to a homeopath, spiritual healer, or traditional healer to seek family planning services. **Table 3.5** above provides more details about the families where the couples in the study sites took family planning services.

Side effects of family planning methods

When we asked if the women or their husbands suffered from any problem or side effects while using the family planning method, 13% of them provided an affirmative response. The proportion of mothers reporting side effects with family planning was highest in Mohammadpur (18%) and lowest in Mirpur (7%). **Figure 3.3** below compared the side effects of family planning in three study sites.

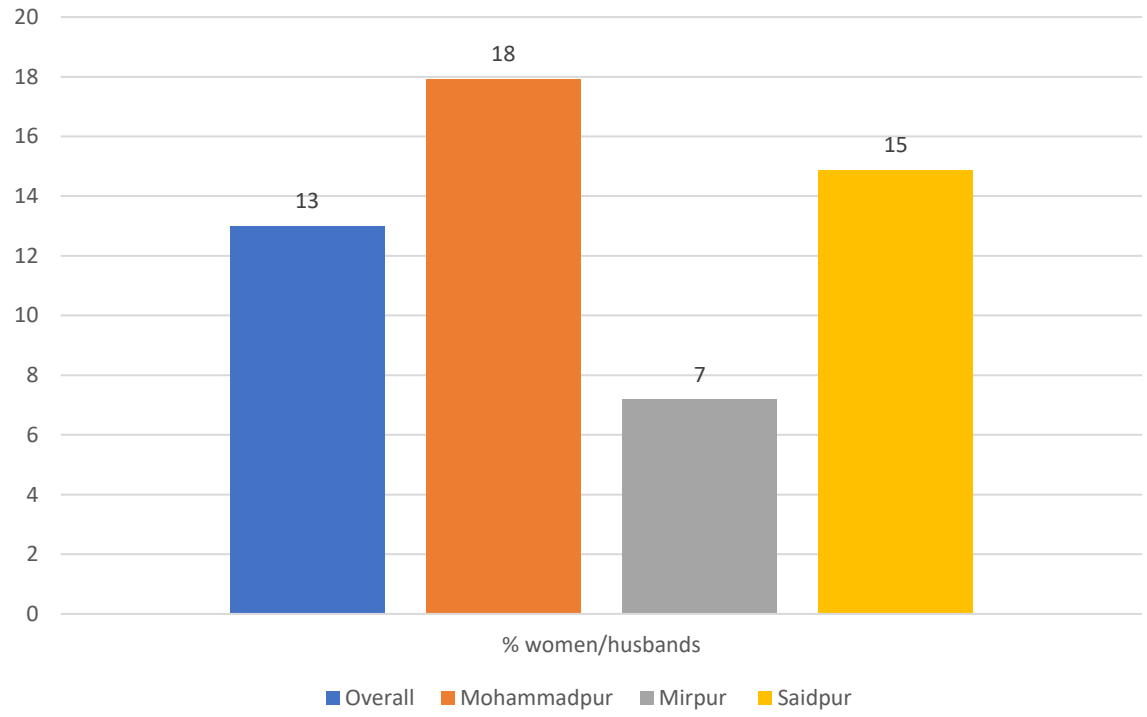


Figure 3.3: Status of side effects related to family planning method

Table 3.6 below lists the side effects of family planning with the proportion of women reporting each side effect. The commonest side effect of the family planning method reported by the enrolled women was irregular menstruation. Overall, about 44% of women reported irregular menstruation, with the highest 49% in Mohammadpur and the lowest 35% in Saidpur as a side effect of the family planning method. Besides, weakness, vertigo/dizziness, back pain, swelling of the hand/feet/body, blurred vision, and excessive bleeding were reported as side effects of the family planning method by 40%, 32%, 28%,

20%, 15%, and 9% of the women, respectively. While vertigo/dizziness and back pain was highest at Saidpur, weakness and excessive bleeding were highly reported in the Mirpur area.

Table 3.6: The side effects of family planning methods by study sites

Problems/side effects (% women reported)	Overall	Mohammadpur	Mirpur	Saidpur
Vertigo/Dizziness	31.8	22.0	22.2	53.9
Irregular menstruation	43.5	48.8	44.4	34.6
Excessive bleeding	9.4	9.8	11.1	7.7
Swelling of hand/feet/body	20.0	24.4	11.1	19.2
Weakness/tired	40.0	36.6	44.4	42.3
Reduce breast milk	3.5	2.4	5.6	3.9
Loss of appetite	5.9	0.0	16.7	7.7
Blurry vision	15.3	12.2	11.1	23.1
Back pain	28.2	17.1	22.2	50.0
Weight gain	4.7	7.3	0.0	3.9
Others	15.3	17.1	16.7	11.5

The data was collected on actions taken if there were any side effects of the family planning method. About 57% of the women who reported at least a side effect of the family planning method said that they did nothing for the problems. About 14% with side effects reported that they went to an MBBS doctor, which is highest in the Mohammadpur area and lowest in the Saidpur area. About 6% of the women said that they switched the method after facing a side effect. List of the action take for the side effects of family planning method are given in **Table 3.7** below.

Table 3.7: List of the actions taken for the side effects of the family planning method

Actions taken (%women said yes)	Overall	Mohammadpur	Mirpur	Saidpur
No action taken	56.5	61.0	55.6	50.0
Went to village doctor	1.2	0.0	0.0	3.9
Went to MBBS doctor	14.1	19.5	11.1	7.7
Stopped using method	2.4	0.0	0.0	7.7
Ate more vegetables	8.2	7.3	5.6	11.5
Drank more water	7.1	2.4	5.6	15.4
Drank milk	4.7	2.4	0.0	11.5
Homeopathic treatment	3.5	0.0	5.6	7.7
Sought advice from BRAC SS	1.2	0.0	5.6	0.0
Sought advice from BRAC SK	0.0	0.0	0.0	0.0
Sought advice from pharmacist	5.9	2.4	0.0	15.4
Switched method	5.9	7.3	11.1	0.0
Others	7.1	9.8	5.6	3.9

Decision making to use family planning method

Most (56%) of the women reported that they took decisions jointly with their husbands about selecting family planning methods or using any method at all. About 18% of the women reported that their husbands decided to use the family planning method. Another 18% reported that they decided solely by themselves. Only 1.5% said they decided jointly with an NGO worker, and 1.2% reported a decision with an MBBS doctor. **Figure 3.4** shows how decisions were made in the families of the study sites about the selection of family planning methods or seeking family planning services.

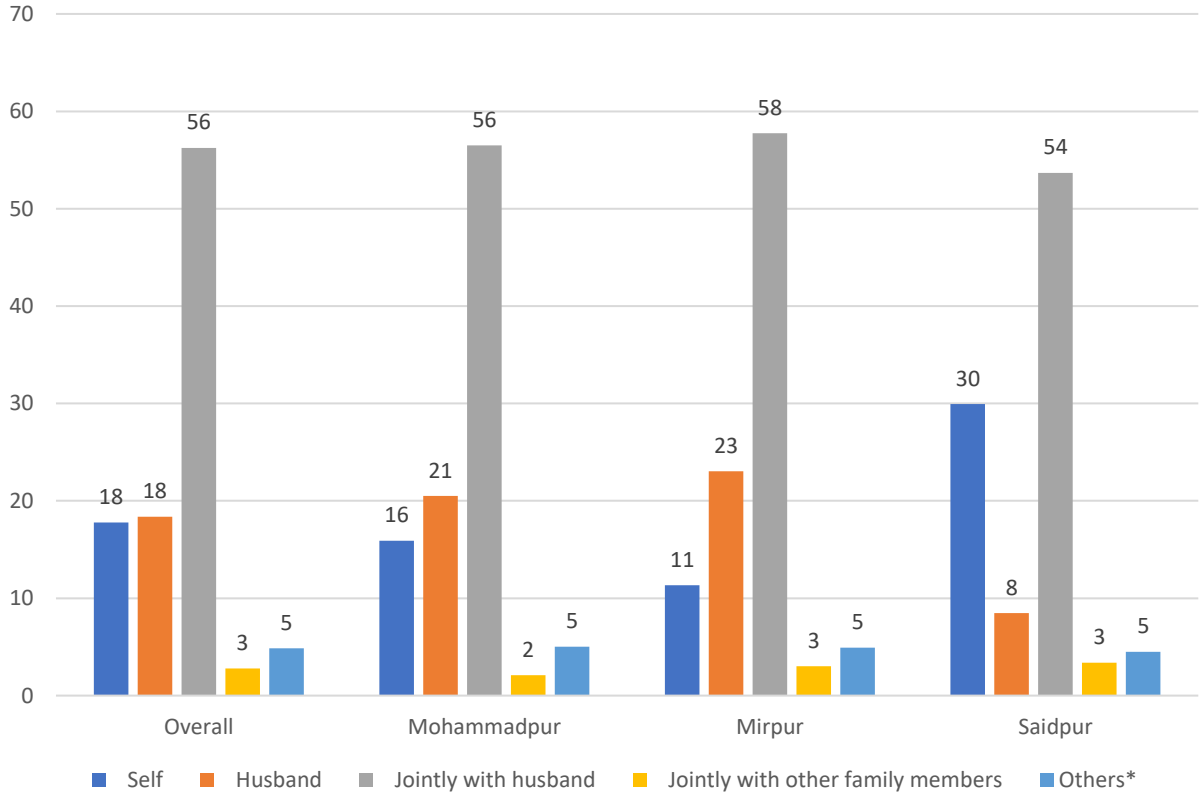


Figure 3.4: Decision making for taking family planning method

*Jointly with relatives, friends, NGO workers, doctors, etc.

Antenatal Care

Antenatal care (ANC) from a medically trained provider is critical to monitor the health status of a pregnant mother by early diagnosis and management of any complications and to reduce the risk of any potential adverse pregnancy outcomes.

ANC Visits

Figure 3.5 below compares the number of women receiving ANC across the sites. According to data, about 96% of the women received at least one ANC visit during their last pregnancy. Among the women enrolled in our study, 60% received at least 4 ANC visits during their last pregnancy, with the highest proportion of the women receiving ≥4 ANC visits in Mohammadpur (69%) and the lowest in Saidpur (46%). About 37% of women received 1-3 ANC visits, and 4% did not receive any such visits during their last pregnancy. Among those who did not receive any ANC visits, 68% (n=17) thought ANC visit was unnecessary, and 24% (n = 6) did not receive ANC visits due to lack of money. About 97% of the women with at least one ANC visit during their last pregnancy had ANC cards.

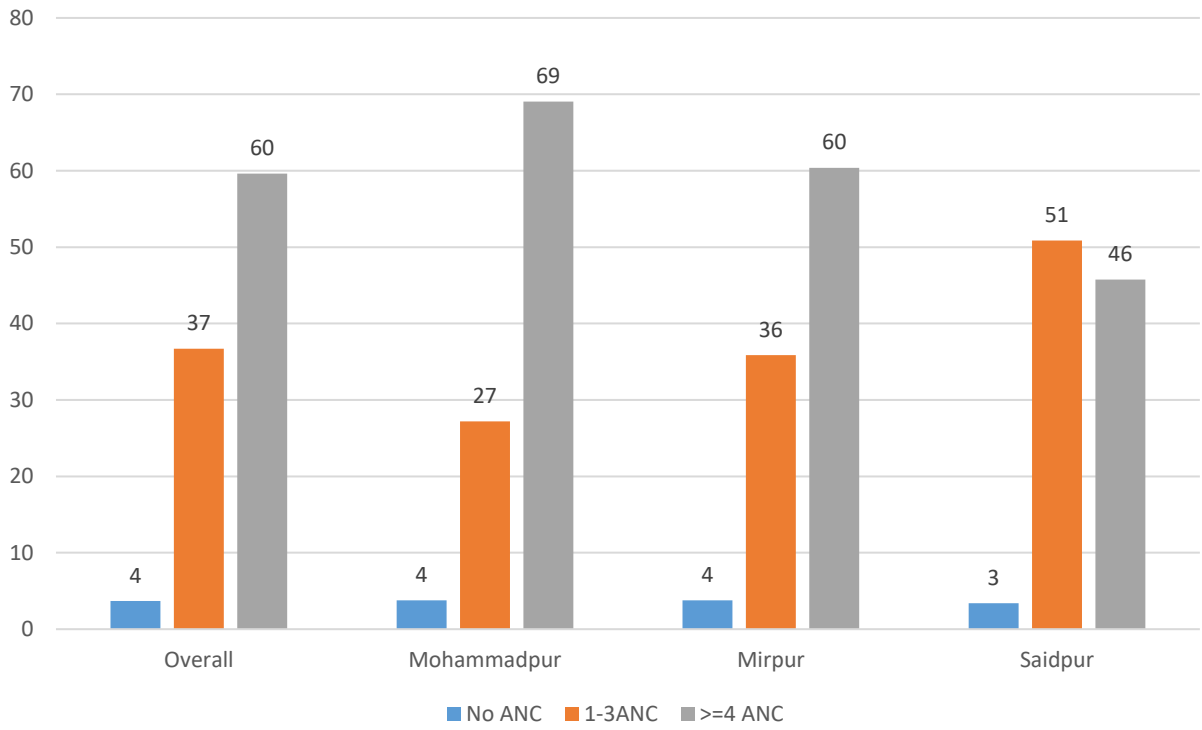


Figure 3.5: Status of ANC received during last pregnancy by the enrolled women

Place and providers of antenatal care

Table 3.8 below provides the information on the facilities or place the women visited to receive their last ANC visit. Among the women enrolled in the study, 26% their last antenatal care service from the maternal and child welfare center. However, in the Mohammadpur area, 73% of the women received ANC services from maternal and child welfare centers (Mohammadpur fertility center). Besides, 34% and 21% of the women of the study areas received their last ANC from NGOs and private facilities, respectively. Receiving ANC services from NGO facilities was highest in the Saidpur area (66%) and lowest in the Mohammadpur area (7%). About 5% of the women went to a government medical college and hospital for their last ANC services.

Table 3.8: Place of last antenatal care during the index pregnancy

Place of ANC (%Yes)	Overall	Mohammadpur	Mirpur	Saidpur
Government medical college & hospital	4.6	8.6	2.4	2.3
District hospital	0.5	0.4	0.4	0.6
Maternal & Child welfare centre MCWC	25.6	72.8	0.0	0.0
Private medical college & hospital	0.9	1.3	0.4	1.2
Private clinic	20.8	5.6	38.4	15.1
NGO hospital/clinic	34.0	6.5	37.7	65.7
Specialized physician's chamber	2.9	0.9	0.4	9.3
Pharmacy	0.3	0.4	0.4	0.0
Others	10.5	3.5	20.0	5.8

Table 3.9 below provides information on the providers from whom they received their last antenatal care.

Table 3.9: providers of last antenatal care during the index pregnancy

Providers/individuals (%Yes)	Overall	Mohammadpur	Mirpur	Saidpur
Specialized physician	26.6	31.9	23.5	23.8
MBBS Doctor	38.5	48.3	42.0	20.4
Nurse/paramedic/FWV/FWA	23.8	16.8	10.6	52.9
BRAC Shasthya Shebika	5.2	0.0	13.3	0.0
BRAC Shasthya Karmi	3.3	0.4	7.8	0.6
NGO Health Workers	0.9	0.9	1.6	0.0
Trained traditional birth attendant (TBA)	0.2	0.4	0.0	0.0
Untrained TBA	0.2	0.0	0.4	0.0
Homeopath	0.2	0.0	0.0	0.6
Don't know	0.8	0.9	0.4	1.2
Others	0.5	0.4	0.4	0.6

Among the participants in this study, about two-thirds (65%) received their last ANC from a qualified physician (specialized physician or MBBS doctor), and 24% received their last ANC from a nurse, paramedic, or similar government provider. About 9% of the women received their ANC from BRAC health workers. The proportion of receiving the last ANC from the qualified physicians was highest in

Mohammadpur (80%) and lowest in Saidpur (44%). However, receiving the last ANC from a nurse, paramedic, or similar government provider was highest in Saidpur (48%) and lowest in Mirpur (10%).

Services received during antenatal care

The women who received at least one ANC were asked about the examinations which were done during her last pregnancy. **Table 3.10** below listed the examinations done during the ANC visits with the percentage of women reported for their examinations. According to the data, about 3 out of 4 women receiving at least one ANC reported doing pulse examination, blood pressure measurement, weight measurement, height measurement, fetal position assessment, and conducting ultrasonogram. Overall, 80% of the women have conducted an ultrasonogram with the highest proportion of ultrasonography, highest in Mohammadpur (81%) and lowest in Saidpur (70%). The proportions of biochemical examination such as blood test and urine test were also highest in Mohammadpur.

Table 3.10: List of examinations done during any of the ANC visits

Examinations were done during the last pregnancy (%women)	Overall	Mohammadpur	Mirpur	Saidpur
Pulse examination	72.3	66.1	73.8	78.4
Blood pressure	78.9	73.5	79.0	86.0
Weight measurement	78.6	79.6	67.9	93.0
Height measurement	33.1	37.0	20.6	46.2
Anemia	58.7	52.6	52.0	76.6
Blood test	70.8	80.4	64.7	66.7
Urine test	67.2	70.9	64.7	66.1
Fetal position	77.6	72.2	72.6	92.4
Fundal Height	31.4	31.7	33.7	27.5
Fetal heart beat	67.5	58.7	66.3	81.3
Ultra sonogram	80.6	87.0	82.1	69.6
Others	3.4	5.7	2.8	1.2

Women in the study areas received health messages on various health issues during their last pregnancy. **Table 3.11** below listed the potential topics of health messages the women might get with the percentage of women who received the messages. According to the data, in more than 90% of the cases, women received health advice from health care providers to take Iron and Folic acid supplementation during their last pregnancy. In more than 80% of the cases, women received advice on diet, rest, and avoiding heavy work during their last pregnancy. The women also received health advice to avoid sexual intercourse during the first and last three months of pregnancy and wear loose clothes in at least 70% of the cases.

Table 3.11: List of the health messages women received during last pregnancy

Health messages during last pregnancy (%women)	Overall	Mohammadpur	Mirpur	Saidpur
Advice on TT vaccination	54.7	44.9	59.2	61.3
Advice on dietary intake	82.7	71.1	90.0	87.5
Advice on resting	84.5	73.3	91.2	89.3
Advice on Iron folic acid intake	93.0	89.3	93.2	97.6
Advice on breastfeeding	59.7	44.4	55.2	86.9
Advice on newborn care	50.2	31.6	44.8	83.3
Advice on family planning	56.9	44.4	52.0	81.0
Advice on not doing heavy works	83.7	70.7	86.4	97.0
Advice on not doing intercourse first and last 3 months of pregnancy	77.1	67.1	81.6	83.9
Advice on taking ANC	56.3	43.1	51.2	81.6
Advice on cleanliness	68.7	54.7	64.4	94.1
Advice on wearing loose clothes	76.4	63.6	78.0	91.1
Advice on contacting the birth attendant or SS	19.1	18.7	18.8	20.2
Advice on complications	32.7	26.7	34.8	37.5
Advice of birth place	38.0	36.0	40.0	37.5
Advice on birth attendant	10.4	15.1	8.0	7.7
Advice on saving money	48.5	44.4	47.6	55.4
Advice on buying a delivery kit	4.2	1.8	3.6	8.3
Advice on keeping cloth for wrapping and wiping the neonate	35.8	25.3	31.2	56.6
Advice on buying misoprostol tablet	0.9	0.4	1.6	0.6
Advice on preparing a transport	18.8	24.4	14.8	17.3
Advice on keeping the phone number	22.2	18.2	30.4	15.5
Advice on fixing a blood donor	58.5	71.1	54.8	47.0
Advice on taking to a hospital for emergency	36.9	38.7	46.4	20.2
Others	0.6	0.0	1.6	0.0

Personal care in pregnancy

Women were asked about some information on their personal care during their last pregnancy, such as vaccination, nutrition supplement, sleep pattern, rest, etc. **Figure 3.6** below compared the proportion of women taking Iron and calcium tablet supplementation during pregnancy. According to the data, 86% of the enrolled women consumed Iron tablets during their last pregnancy, and 83% women calcium tablets. The proportion of women taking Iron and Calcium was highest in the Mohammadpur area and lowest in the Saidpur area.

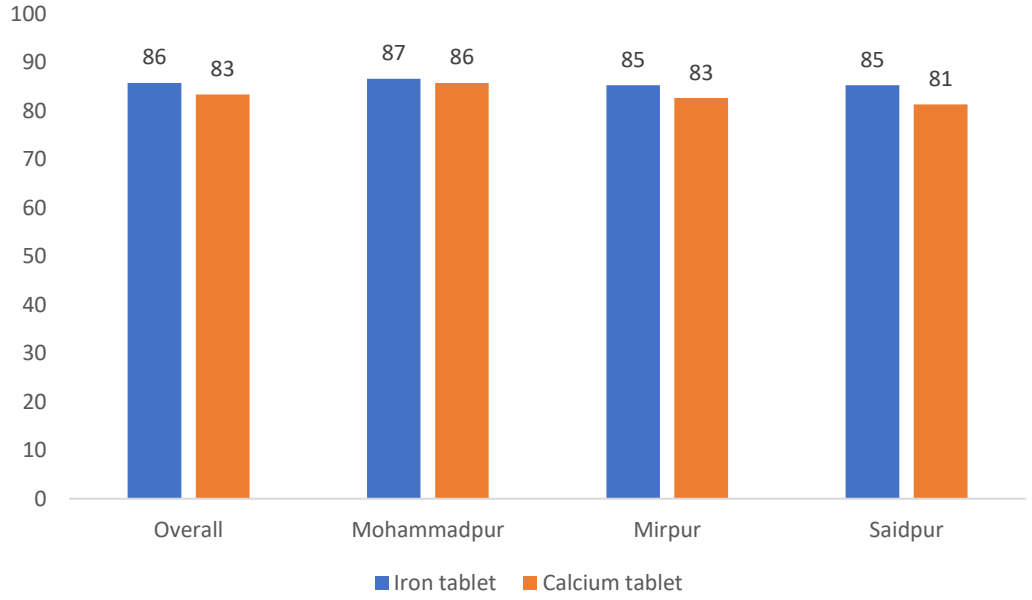


Figure 3.6: Pregnant women taking IFA and Calcium tablets by study sites

Table 3.13 below provides information on personal care during pregnancy.

Table 3.12: Status of personal care taken during pregnancy

Personal cares	Overall	Mohammadpur	Mirpur	Saidpur
TT Injection during this pregnancy	37.7	30.5	50.2	28.8
TT doses were completed before this pregnancy	49.2	61.5	44.2	40.1
Rest during daytime (without sleep)	133.2±78.7	131.8 ±80.6	145.02±78.7	117.4±73.5
Rest during night (without sleep)	131.34±77.7	129.4 ±88.7	137.0±76.2	125.6±62.5
Rest during daytime (sleep)	83.7±74.8	88.9 ±79.0	88.5±80.2	69.3±57.0
Rest during night (sleep)	394.6±143.9	389.9 ±129.9	397.4±138.9	396.7±168.1
Did heavy work during pregnancy	22.8	21.8	27.2	17.5

Overall, 38% of the participants took TT injection during the index pregnancy. Another 49% were done with their TT doses before the index pregnancy. The proportions with completed TT doses combining those who taken TT injections during the index pregnancy and their previous pregnancy was highest in the Mirpur area (94%) and lowest in the Saidpur area (69%). On average, the mothers of <2 years old children slept 8 hours on a typical 24 hours during their last pregnancy. Overall, 23% of the women reported that they had to do heavy work during their last pregnancy.

Figure 3.7 shows the status of food consumption of the participating mothers during their last pregnancy. Overall, 44% of the mothers said they consumed less food than usual during their last pregnancy. Besides, 18% of the participants had consumed more food than usual, with a highest of 23% in Mirpur and the lowest 7% in Saidpur. Overall, 39% of mothers reported no changes in food consumption between the usual time and the last pregnancy period.

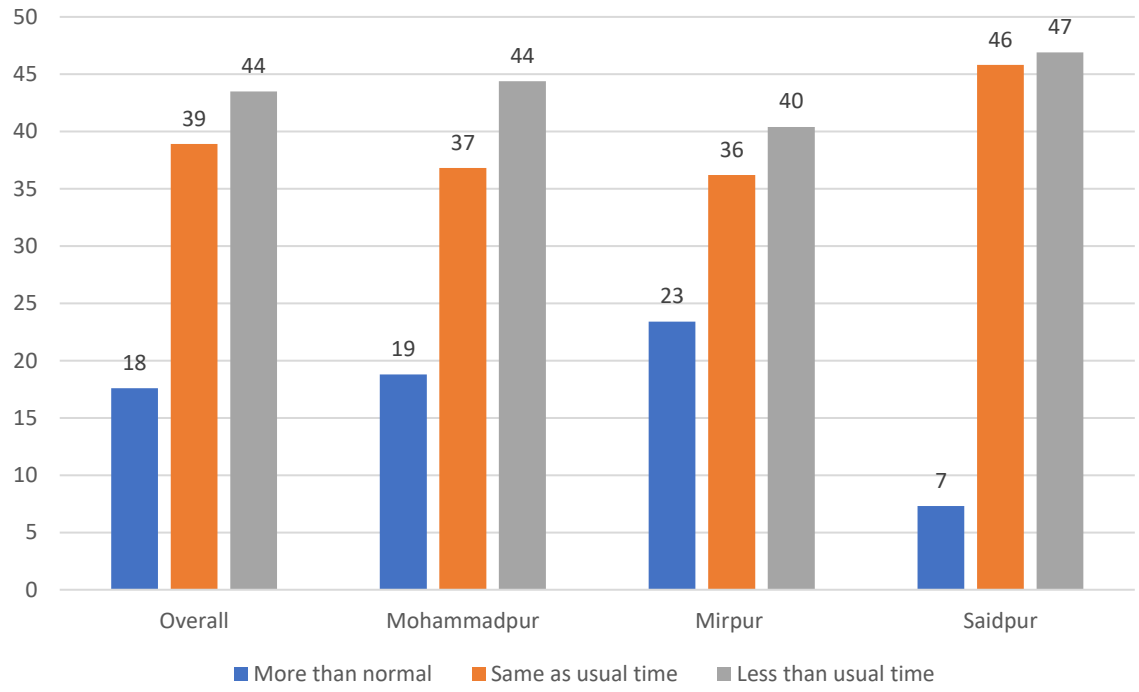


Figure 3.7: Status of food consumption during pregnancy

Decision making regarding antenatal care

Most (54%) of the women reported that they decided jointly with their husbands about taking antenatal care. About 17% of the women said their husbands made decisions for them, and 16% reported that they decided solely by themselves about taking antenatal care. About 20% of the participants said they jointly made the decision about antenatal care. Only 5% of the women reported that they made their

decision about taking ANC jointly with their providers, NGO workers, other relatives, or friends. **Figure 3.8** below compared the decision-making of ANC among three study sites.

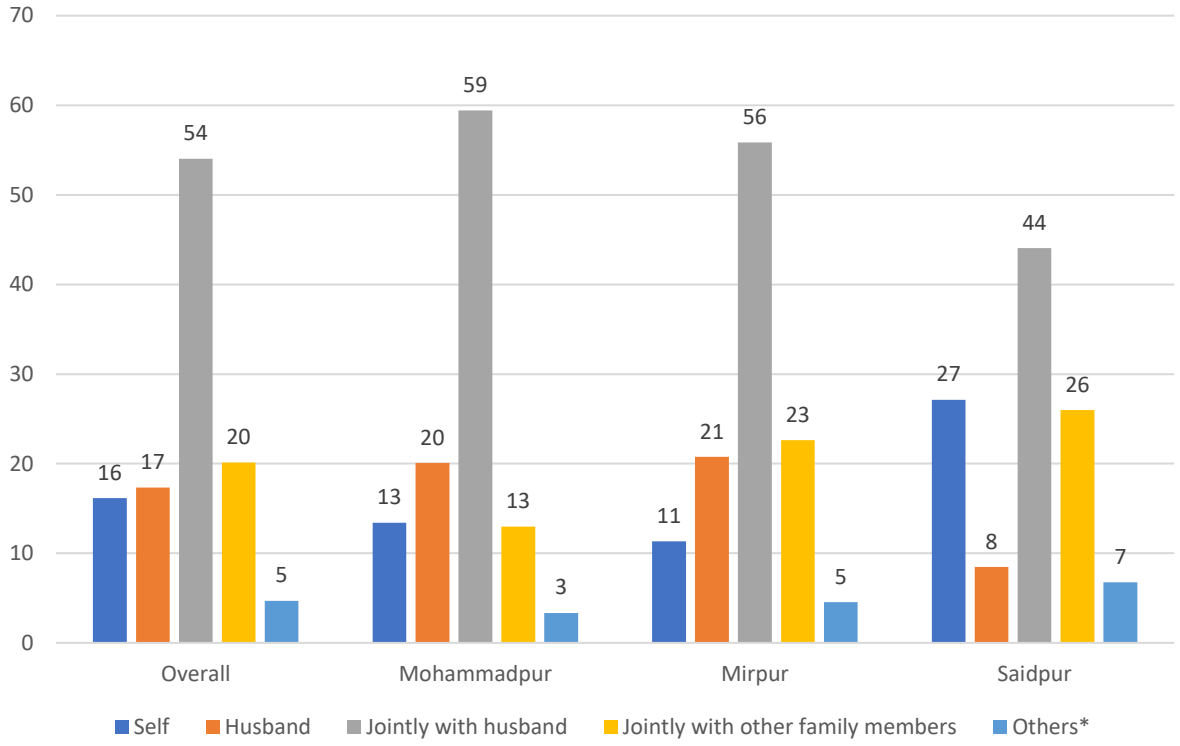


Figure 3.8: Major decision making regarding antenatal care

*Jointly with relatives, friends, NGO workers, birth attendants, doctors, etc.

Birth Preparedness

Birth preparedness denotes the initiatives taken in advance, anticipating the actions required for safe delivery or planning and preparing for the steps to be taken in case of an emergency. By being adequately prepared for birth and for emergency complications, the lives of the mothers and newborns can be safer, delays with care-seeking in obstetric emergencies can be reduced. In this survey, we collected information on birth preparedness taken during their last pregnancy, focusing on place and providers of delivery services. **Figure 3.9** below shows the proportions of women taken birth preparedness during their last pregnancy across the study sites. Overall, the families of about 77% of women had taken preparation for their last childbirth at the of pregnancy. The proportion of women with birth preparedness was highest in Saidpur (90%) and lowest in Mirpur (72%).

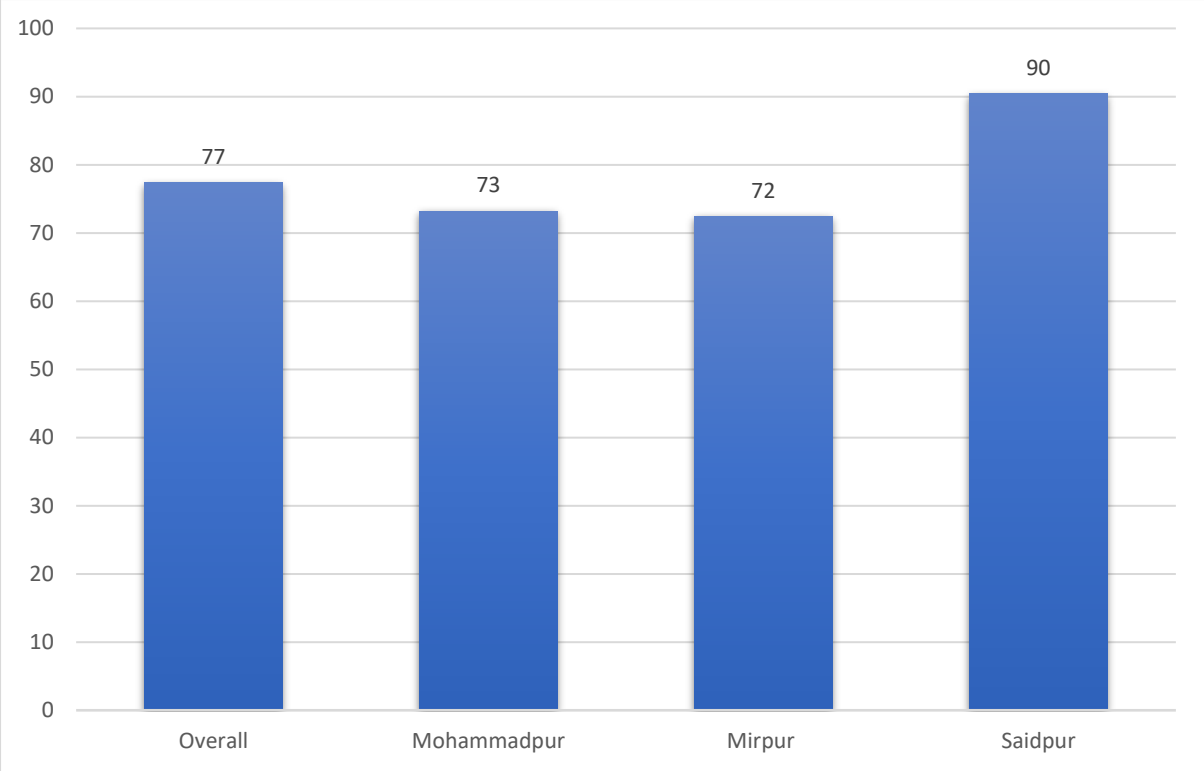


Figure 3.9: The proportions of women with birth preparedness during their last pregnancy

Table 3.14 provides a list of plans or preparations taken by the women or their families to respond to an emergency.

Table 3.13: List of preparations taken as part of birth preparedness

Plans or preparations	Overall	Mohammadpur	Mirpur	Saidpur
Determined place of delivery	93.4	96.0	93.2	90.6
Determined attendant at delivery	23.9	13.1	30.7	27.5
Saved money	85.4	86.9	82.3	87.5
Bought delivery kit for home delivery	12.7	4.6	9.9	25.0
Arranged clean cloth for wiping and wrapping baby alter birth	83.7	73.7	81.8	96.9
Bought misoprostol tablet	1.1	0.0	1.6	1.9
Arranged transport for emergency	16.7	14.9	10.4	26.3
Had emergency phone no. of health worker	24.3	15.4	29.2	28.1
Determined blood donor	55.6	74.9	46.9	45.0
Others	1.7	3.4	0.0	1.9

Among those who had taken preparation anticipating an emergency, 93% determined a place of delivery, 85% saved money, 84% arranged cloths for wiping and wrapping the baby after birth, and 56% arranged a blood donor well before the expected date of delivery. Among other plans, 24% said they had determined a birth attendant, and another 24% said they collected a phone of a health worker who could help during an emergency.

Among those who decided about a facility or place for delivery, about 31% of the respondents mentioned a government facility, including a government medical college hospital, maternal and child welfare centers, etc. About 22% had planned to deliver the baby at a private clinic. Another 20% planned to deliver the baby at an NGO hospital or clinic. About 16% of the respondents determined to deliver the baby at home. The highest proportion of women who planned their delivery at an NGO facility was in the Saidpur area (39%), and the lowest was in the Mohammadpur area (7%). **Table 3.15** provides more details about the planned place of delivery by study sites.

Table 3.14: The facilities/places planned for delivery by study site

Facilities/place	Overall	Mohammadpur	Mirpur	Saidpur
Government medical college & hospital	10.3	18.3	4.7	8.1
District hospital	0.8	0.6	1.0	0.6
Upazila/thana health complex	0.8	0.0	0.5	1.9
Maternal & child welfare centre MCWC	19.0	57.1	0.0	0.0
Private medical college & hospital	1.0	1.1	1.0	0.6
Private clinic	22.4	4.6	35.4	26.3
Others NGO hospital/clinic	22.2	6.9	21.9	39.4
Specialized physician's chamber	0.2	0.6	0.0	0.0
Pharmacy	0.2	0.6	0.0	0.0
At home	15.8	6.9	21.9	18.1
Don't know	0.4	0.0	0.0	1.3
Others	7.2	3.4	13.5	3.8

Table 3.16 below provides the list of providers or individuals selected by the families or the women who decided for home delivery as birth attendants as part of the birth preparedness. More than half (53%) of the women or their families selected a trained traditional birth attendant (TTBA), and about one-third (33%) of them selected an untrained traditional birth attendant as a birth attendant to help for home delivery. The proportion of families choosing traditional birth attendants (both trained and untrained) as birth attendants was highest in the Saidpur area.

Table 3.15: List of the providers/individuals selected as birth attendants for home delivery by study sites

Providers/individuals (%Yes)	Overall	Mohammadpur	Mirpur	Saidpur
Specialized physician	1.2	0.0	0.0	3.5
MBBS Doctor	2.4	8.3	0.0	3.5
Nurse/paramedic/FWV/FWA	3.6	0.0	7.1	0.0
BRAC Shasthya Shebika	2.4	0.0	4.8	0.0
NGO Health Workers	1.2	8.3	0.0	0.0
Trained traditional birth attendant	53.0	50.0	50.0	58.6
Untrained traditional birth attendant	32.5	33.3	31.0	34.5
Don't know	1.2	0.0	2.4	0.0
Others	2.4	0.0	4.8	0.0

Decision making in birth preparedness

Most (50%) of the women reported that they decided jointly with their husbands about preparedness for an emergency. About 19% of the women reported that they took the decision together with family members or relatives. About 17% of the women said their husbands made decisions about birth preparedness, and 12% of women decided solely by themselves. **Figure 3.10** shows how decisions were made in the families about planning or preparing for an anticipated emergency during delivery.

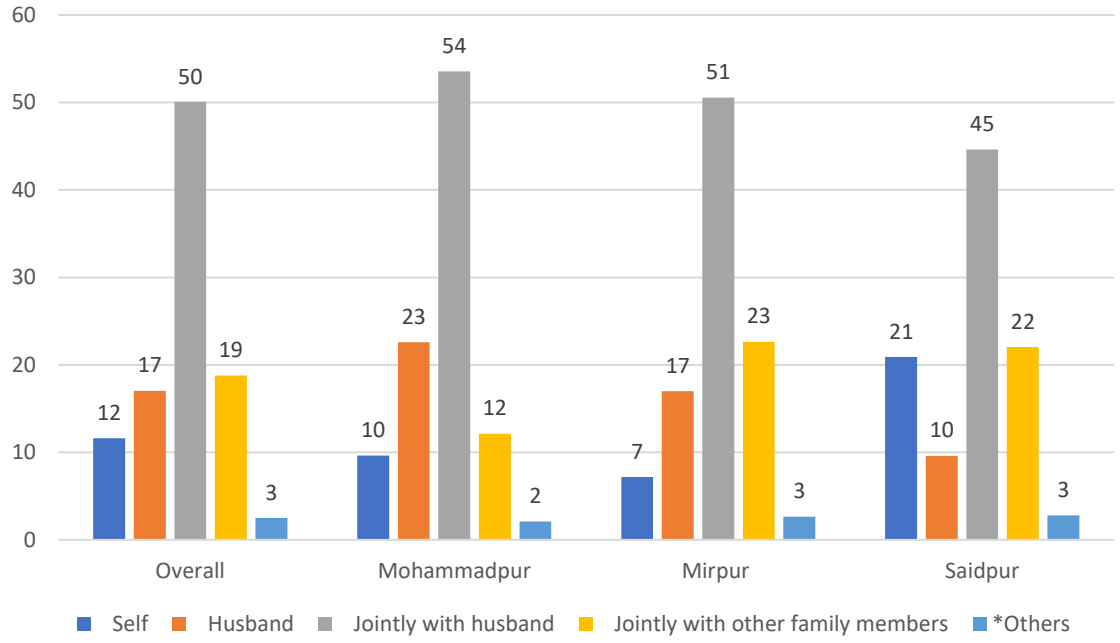


Figure 3.10: Decision making for birth preparedness across the study sites

*Jointly with relatives, friends, NGO workers, birth attendants, doctors, etc.

Complications during pregnancy

Figure 3.11 below shows the proportions of the women who faced a problem or complication during their last pregnancy. Overall, 36% of the women experienced a problem or complication during their pregnancy. The proportion of women with a problem or complication during their last pregnancy was highest in the Saidpur area (49%) and was lowest in the Mirpur area (28%).

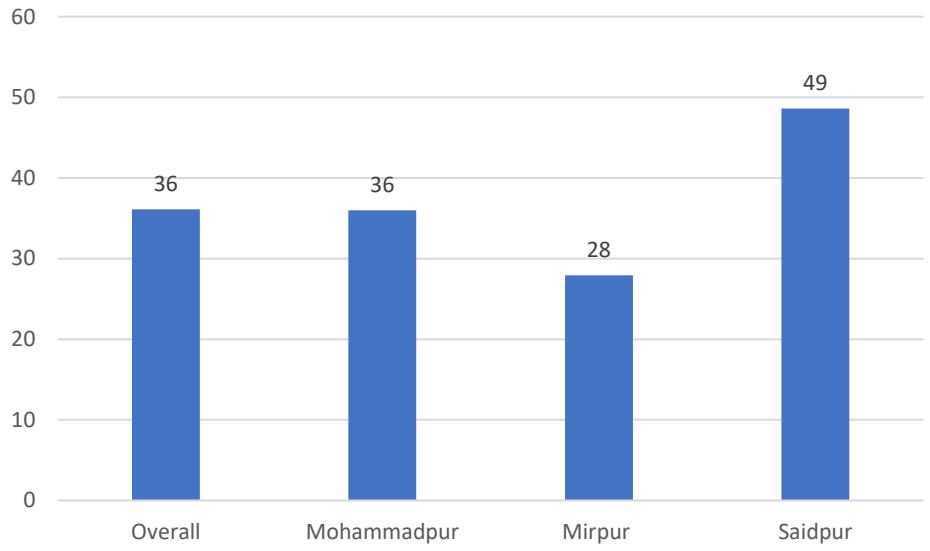


Figure 3.11: Proportion of women with complications during last pregnancy

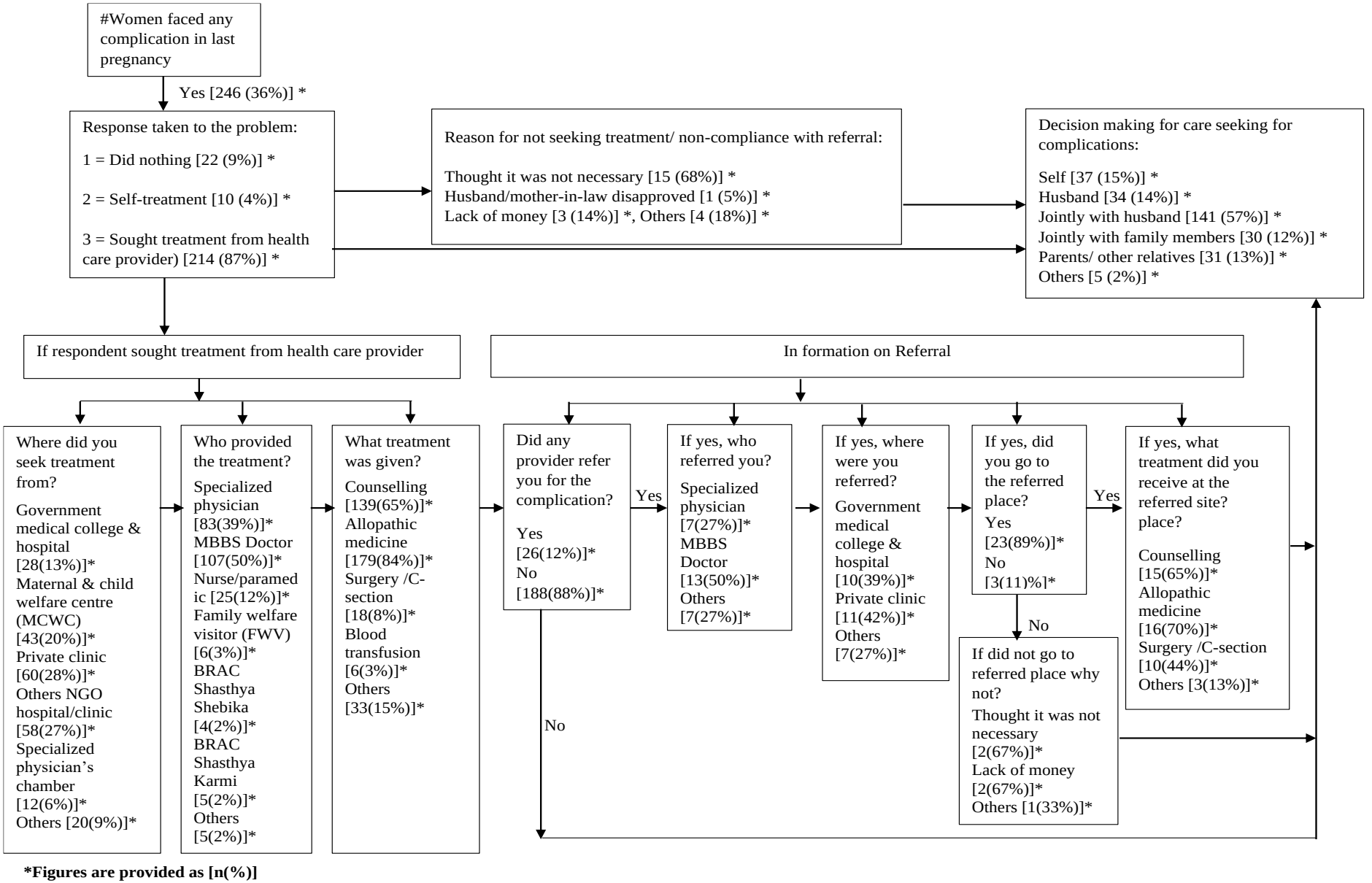
Table 3.17 provides a comprehensive list of the problems or complications reported by the participants of the survey. Overall, 37%, 21%, 18%, 16%, and 13% of the participants reported lower abdominal pain, severe headache, excessive vomiting, edema, and high fever, respectively, as the major complications faced during their last pregnancy. In general, the women of the Saidpur area suffered from pregnancy complications in the highest proportions compared to those who reside in Mohammadpur and Mirpur areas.

Table 3.16: List of pregnancy complications reported by study sites

List of complications	Overall	Mohammadpur	Mirpur	Saidpur
High blood pressure	7.3	8.1	4.1	9.3
Oedema	15.5	17.4	6.8	20.9
Convulsion	1.6	3.5	1.4	0.0
Excessive bleeding	7.3	4.7	10.8	7.0
Abnormal position of the baby	6.1	1.2	4.1	12.8
High fever	13.0	19.8	5.4	12.8
Severe headache	21.1	23.3	10.8	27.9
Blurred vision	4.1	2.3	1.4	8.1

List of complications	Overall	Mohammadpur	Mirpur	Saidpur
Abortion/miscarriage	0.0	0.0	0.0	0.0
Reduced/absent fetal movement	7.7	4.7	13.5	5.8
Lower abdominal pain	36.6	33.7	35.1	40.7
Anemia	7.3	5.8	6.8	9.3
Jaundice	0.8	1.2	1.4	0.0
Excessive vomiting	17.5	10.5	13.5	27.9
Tetanus	0.0	0.0	0.0	0.0
IUD	0.0	0.0	0.0	0.0
Don’t know	0.4	1.2	0.0	0.0
Others	37.4	43.0	33.8	34.9

Figure 3.12 below demonstrates the pathways showing the treatment-seeking pattern of the women who faced complications during their last pregnancy. Out of the 246 women experiencing complications during pregnancy, 32 (13%) of them did nothing or took the home remedy, and 214 (87%) sought treatment from a health care provider. About 50% of the women who sought treatment from a health care provider went to a government health care facility.



***Figures are provided as [n(%)]**

Figure 3.12: Treatment seeking pathway for pregnancy complications

Delivery care

Among the participating women, 91% delivered their last child after completing 37 weeks of pregnancy, and the rest had a premature delivery. The proportion of women with premature delivery was highest in the Mohammadpur area and lowest in the Saidpur area. Figure 3.13 compared the proportions of term and preterm delivery across three areas.

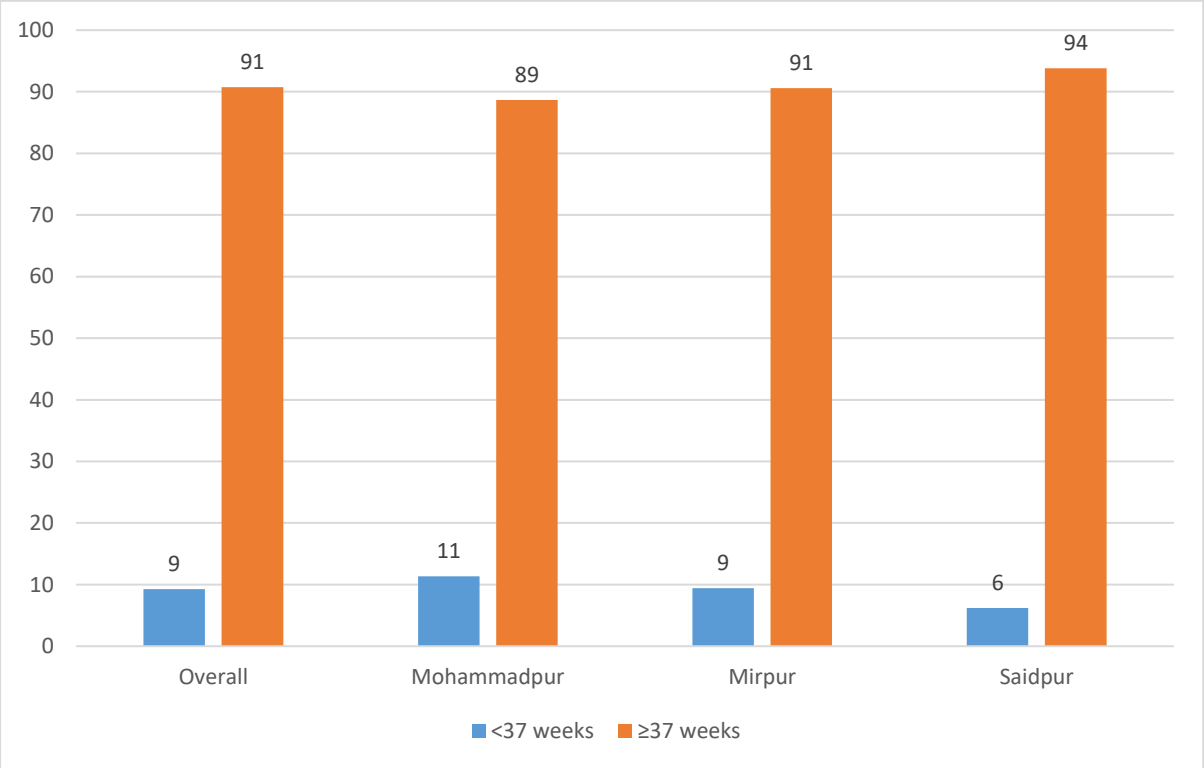


Figure 3.13: Status of premature and term deliveries by study sites

Mode of delivery

According to data, 51% of the last delivery of enrolled women conducted by cesarean section with the highest proportion of cesarean section among the women of Mohammadpur area (54%) and lowest percentage of cesarean section in Saidpur area (45%). Overall, 25% of the births occurred through normal vaginal delivery (NVD), and another 24% was through assisted normal vaginal delivery (Assistant NVD). The proportion of NVD was highest in the Saidpur area (34%), while assisted NVD was highest in the Mirpur area (26%). The bar chart **(Figure 3.14)** below shows of proportions of modes of delivery across the study sites.

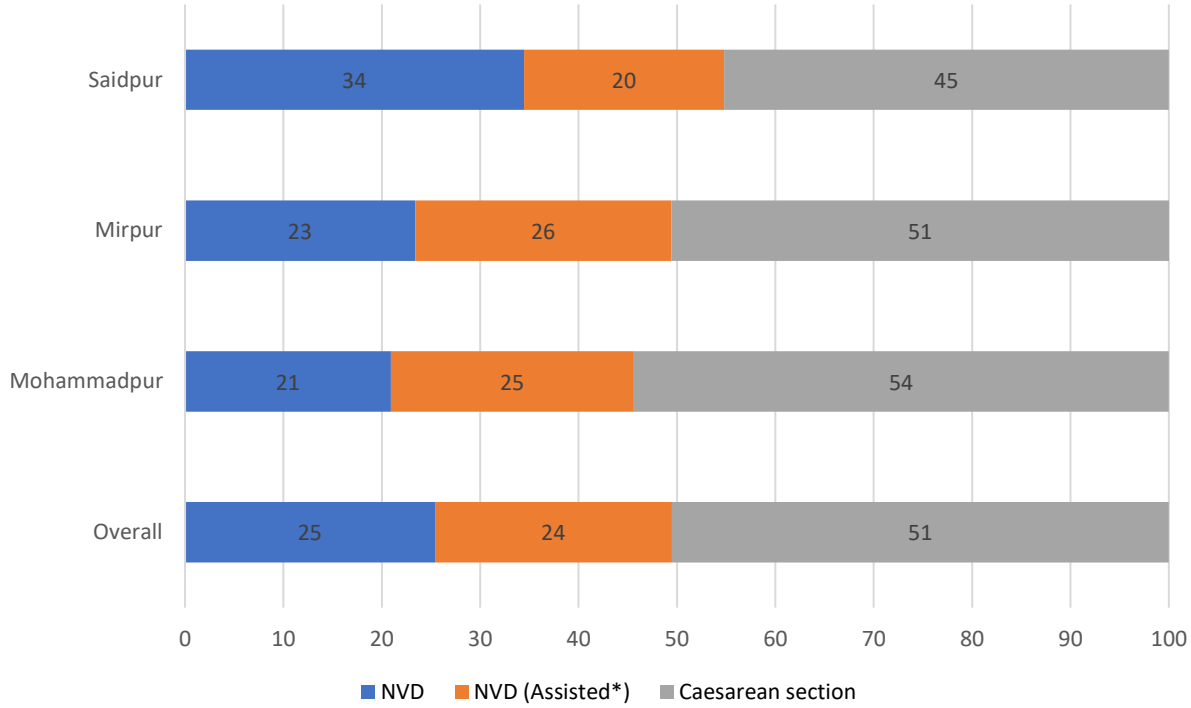


Figure 3.14: Mode of delivery among the women by study sites

Place and providers of delivery care

About 29% of the children enrolled were delivered in private clinics, followed by 20% in maternal and child welfare centers and 13% in NGO facilities. About 11% of the delivery was conducted at home. The proportion of home delivery was highest in the Mirpur area and lowest in the Mohammadpur area. The proportion of delivery at private clinics was highest in Mirpur and lowest in the Mohammadpur area. In the selected areas of Dhaka and Saidpur, about 4% of delivery was conducted at BRAC Susasthya. **Table 3.18** provides more details on places of delivery of the children enrolled in the survey.

Table 3.17: List of the place of delivery of the last child

Place of delivery	Overall	Mohammadpur	Mirpur	Saidpur
Home	11.3	5.0	16.6	11.9
District Hospital	6.0	10.9	4.2	2.3
Upazilla/Thana health complex	1.6	0.4	0.8	4.5
Maternal and child welfare centre	20.4	58.2	0.0	0.0
BRAC Susasthya	4.4	0.0	11.3	0.0
Private Clinic/hospital	28.5	8.0	43.0	34.5
NGO Hospitals/clinics	12.9	3.8	6.8	34.5
Others	14.8	13.8	17.4	12.4

Table 3.19 below shows the providers or individuals who conducted the delivery of the last child born to the enrolled mothers in this survey. According to data, 65% of the last delivery was conducted by an MBBS doctor, followed by 17% by a nurse, paramedic, or a similar government provider.

Table 3.18: List of the providers or individuals assisted in the delivery

Providers/individuals	Overall	Mohammadpur	Mirpur	Saidpur
Trained traditional birth attendant	10.3	2.9	18.9	7.3
Untrained traditional birth attendant	3.2	1.7	3.4	5.1
Shasthya shebika	0.7	0.0	1.5	0.6
Nurse/paramedic/FWV/FWA	16.9	13.0	9.1	33.9
MBBS Doctor	65.1	79.1	60.8	52.5
Self/no one	0.2	0.0	0.4	0.0
BRAC SK	1.5	0.4	3.4	0.0
Others (Specify)	2.2	2.9	2.6	0.6

About 60% of women reported using a delivery kit by the birth attendant during delivery if the delivery was at home or on the way to the facility. In the case of home delivery, in 64% of the cases, the umbilical cord was cut by a trained traditional birth attendant. In 29% of cases, the cord was cut by a traditional birth attendant. In 62% of cases, the cord was cut by a new blade. **Table 3.20** below provides details about how home deliveries were managed.

Table 3.19: Management of home deliveries

Traits	Overall	Mohammadpur	Mirpur	Saidpur
Used delivery kit	59.7	41.7	56.8	76.2
Person cut the cord				
MBBS doctor	1.3	0.0	2.3	0.0
Family welfare visitor	1.3	0.0	2.3	0.0
Trained traditional birth attendant	63.6	50.0	70.5	57.1
Traditional birth attendant	28.6	41.7	18.2	42.9
Others	5.2	8.3	6.8	0.0
Materials used for cutting the cord				
Surgical blade	2.6	0.0	4.6	0.0
Delivery kit blade	3.9	16.7	2.3	0.0
Scissor	5.2	0.0	9.1	0.0
New boiled blade	62.3	66.7	50.0	85.7
New blade but not boiled	5.2	0.0	6.8	4.8
Old blade but not boiled	5.2	0.0	9.1	0.0
New blade and washed with savlon	1.3	8.3	0.0	0.0
Don’t know	14.3	8.3	18.2	9.5

Traits	Overall	Mohammadpur	Mirpur	Saidpur
Waiting time for cutting the cord	13.2±12.6	13.4±13.1	7.0±3.7	21.5±15.5
Materials used for tying the cord				
Thread boiled	74.0	83.3	63.6	90.5
Thread not boiled	15.6	8.3	20.5	9.5
Don't know	7.8	0.0	13.6	0.0
Others	2.6	8.3	2.3	0.0

Decision making related to delivery care

Figure 3.15 compares how decisions were made to seek delivery care across the study sites. Overall, in 30% of the cases, women themselves decided the issues related to childbirth, such as delivery, birth attendant, etc., along with another 19% of cases. They took the decision jointly with their husbands. In 9% of cases, the decisions were taken by their husbands. In 35% of cases, decisions were taken jointly with their family members. The proportion taking such decision solely by the women was highest in Saidpur, where 48% of the women took the decision by themselves about where or when they should seek delivery care and lowest in Mohammadpur area.

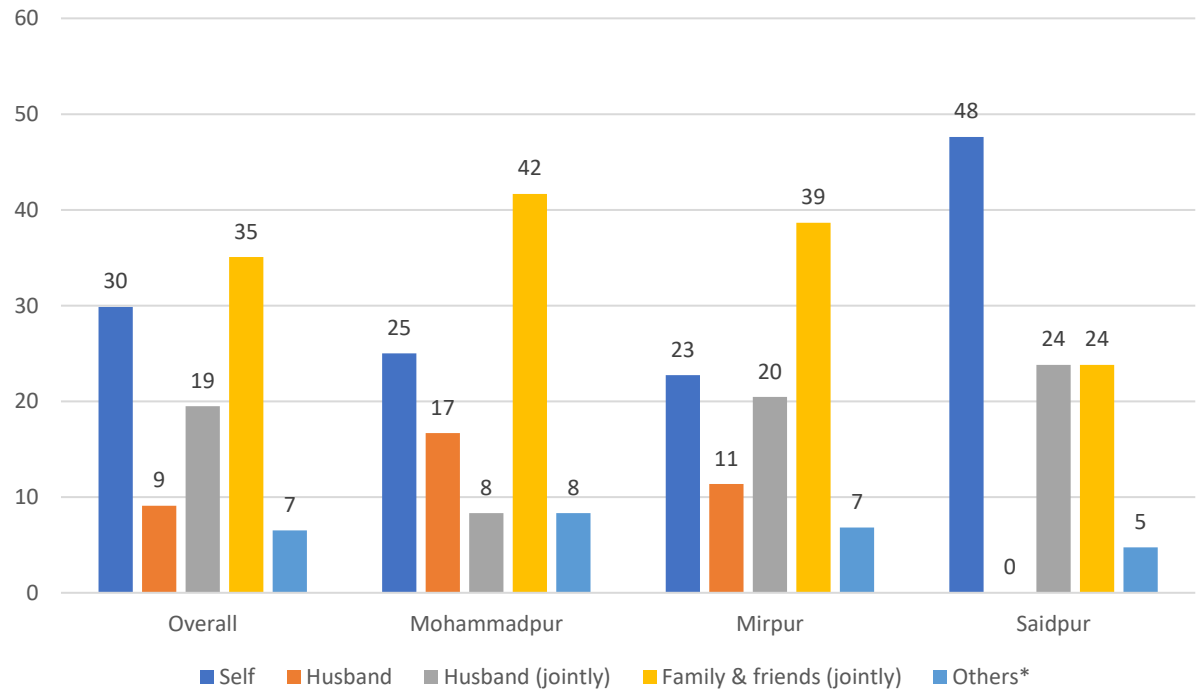


Figure 3.15: Decision making for seeking delivery care by study site

*Jointly with friends, birth attendants, etc.

Complications during delivery

About 19% of the women said they face a complication during the delivery. The proportion with delivery complications was highest in Saidpur (29%) and lowest in the Mirpur area (14%). **Table 3.23**

below shows the types of complications faced by the women during their last childbirth. Overall, about 19% of the women reported they had prolonged labor in delivering their last child, followed by severe headache, blurred vision, and high blood pressure in 16% of women, severe hemorrhage in 15% of women, and abnormal position of the baby was in 14% of the women. About 63% of the women received a vitamin A capsule after delivery. **Table 3.23** below listed the complications faced by the women during their last delivery with proportions of women who face an individual complication.

Table 3.20: List of complications during delivery

Types of complications	**Overall**	**Mohammadpur**	**Mirpur**	**Saidpur**
Severe haemorrhage	14.7	17.1	23.7	6.0
High fever	9.3	14.6	10.5	4.0
High blood pressure	15.5	19.5	13.2	14.0
Blurry Vision	15.5	12.2	18.4	16.0
Severe headache	16.3	17.1	10.5	20.0
Abnormal position of the baby	14.0	14.6	13.2	14.0
Prolonged labour >12 hours	19.4	24.4	18.4	16.0
Retained placenta	2.3	2.4	2.6	2.0
Ruptured uterus	0.8	0.0	0.0	2.0
Cord prolapsed	0.0	0.0	0.0	0.0
Hand/leg prolapsed	0.0	0.0	0.0	0.0
Cord around neck	0.8	0.0	0.0	2.0
Convulsion	7.8	17.1	5.3	2.0
Mother Became senseless	2.3	0.0	0.0	6.0
Perineal tear	3.1	4.9	5.3	0.0
Still birth	0.0	0.0	0.0	0.0
Obstructed labour	10.1	9.8	10.5	10.0
Others	49.6	43.9	42.1	60.0

Postnatal care

About one-third of the participating women reported that they sought postnatal care (PNC) after their last childbirth. The proportion of seeking PNC services was highest in the Saidpur area (59%) and lowest in the Mirpur area (19%). Among those who sought PNC services, about 42% received PNC services at least four times after their last childbirth, which is highest in the Saidpur area (49%) and the lowest in the Mohammadpur area (34%).

Places and providers of postnatal care

Table 3.24 provides a comprehensive list of the place of postnatal care taken by the survey participants. Among those who received PNC services, about 40% received their first PNC from private facilities, 33% from a government facility, and 19% received it from an NGO hospital or clinic. Receiving PNC services from a private facility was highest among those living in the Mirpur area (66%) and lowest among those living in the Mohammadpur area (7%).

Table 3.21: Place of seeking postnatal care (PNC) services by study sites

Places of PNC	Overall	Mohammadpur	Mirpur	Saidpur
Government medical college & hospital	10.3	12.9	10.0	8.7
Government specialized hospital	0.0	0.0	0.0	0.0
District hospital	1.8	1.4	4.0	1.0
Upazila/thana health complex	1.3	0.0	0.0	2.9
Maternal & child welfare centre MCWC	19.6	62.9	0.0	0.0
Private medical college & hospital	2.2	4.3	0.0	1.9
Private clinic	39.7	7.1	66.0	49.0
Others NGO hospital/clinic	18.8	7.1	6.0	32.7
Specialized physician's chamber	2.2	1.4	0.0	3.9
Pharmacy	4.0	5.7	8.0	1.0
Don't know	0.0	0.0	0.0	0.0
Can't remember	0.0	0.0	0.0	0.0
Others	2.7	0.0	8.0	1.9

Among the participants who sought PNC, 42% sought their first PNC service from a specialized physician and 38% from an MBBS doctor. Seeking PNC services from a physician was highest in the Mohammadpur area (89%) and lowest in the Saidpur area (75%). Overall, 23% of the women said they received their first PNC service from a nurse or a paramedic or a similar government provider. **Table 3.25** provides more on providers of first postnatal care received by the survey participants.

Table 3.22: Providers of postnatal care (PNC) services by study sites

Providers of first PNC	Overall	Mohammadpur	Mirpur	Saidpur
Specialized physician	42.0	51.4	40.0	36.5
MBBS Doctor	38.0	37.1	38.0	38.5
Nurse/paramedic/FWV/FWA	23.2	14.3	16.0	32.7
BRAC Shasthya Shebika	0.9	0.0	4.0	0.0
BRAC Shasthya Karmi	1.3	1.4	4.0	0.0
NGO Health Workers	0.5	1.4	0.0	0.0
Traditional trained birth attendant (TTBA)	0.9	1.4	0.0	1.0
Trained birth attendant (TBA)	0.5	1.4	0.0	0.0
Village doctor	0.5	0.0	0.0	1.0
Homeopath	0.9	0.0	0.0	1.9
Medicine seller	3.6	5.7	6.0	1.0
Pusti apa (CNO/CNP)	0.0	0.0	0.0	0.0
Kabiraj	0.0	0.0	0.0	0.0
Pir/fakir	0.0	0.0	0.0	0.0
Don't know	0.0	0.0	0.0	0.0
Can't remember	0.0	0.0	0.0	0.0
Others (Specify)	0.0	0.0	0.0	0.0

Services received during PNC visit

Table 3.26 provides a comprehensive list of the services received by the women during their first postnatal care visit after their most recent delivery. Overall, 78%, 61%, 55%, 55%, 50%, 47%, 46%, 43%, and 39% received services/advice related to blood pressure, pulse examination, help to breastfeed the baby, vitamin A/Iron tablets, hygiene, anemia, weight measurement of the baby, nutrition counseling and breastfeeding advice, respectively. In general, the mothers of the Saidpur area received the services in a higher proportion compared to the other two areas.

Table 3.23: Status of services received at postnatal care (PNC) visits

Services received at 1st PNC	Overall	Mohammadpur	Mirpur	Saidpur
Pulse examination	61.4	50.8	51.0	73.3
Blood pressure	78.1	78.5	73.5	80.2
Anaemia examination	47.4	35.4	20.4	68.3
Measuring new-born weight	45.6	49.2	24.5	53.5
Measuring mothers' weight	25.1	20.0	20.4	30.7
Help to breast feed	54.9	41.5	36.7	72.3
Provide Vit A/Iron tablet	55.4	49.2	40.8	66.3
Given advice on nutrition	43.3	32.3	22.5	60.4

Services received at 1st PNC	Overall	Mohammadpur	Mirpur	Saidpur
Given advice on cleanliness	50.2	33.9	18.4	76.2
Advice on postnatal/neonatal complications	25.1	12.3	12.2	39.6
Given advice on danger signs	20.0	10.8	12.2	29.7
Given advice on Family planning	36.7	21.5	18.4	55.5
Given advice on breastfeeding	39.1	20.0	26.5	57.4
Others	7.4	6.2	12.2	5.9

Decision making for seeking PNC

Most (47%) women reported that they decided jointly with their husbands about seeking postnatal care. About 21% of the women decided solely by themselves. However, 15% of the women said their husbands made the decisions for them. In the case of 16% of women, decisions were made jointly with families and relatives. **Figure 3.16** shows how decisions were made in the families of the selected sites seeking postnatal care.

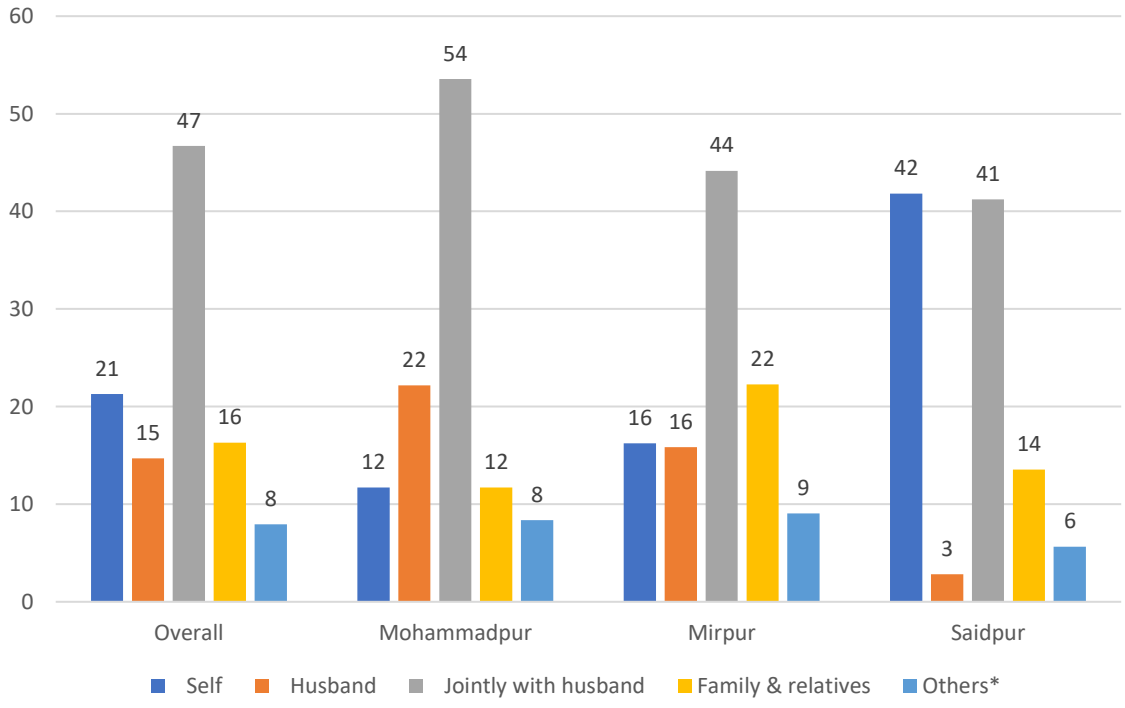


Figure 3.16: Decision making for seeking antenatal care by study site

*Jointly with friends, birth attendants, etc.

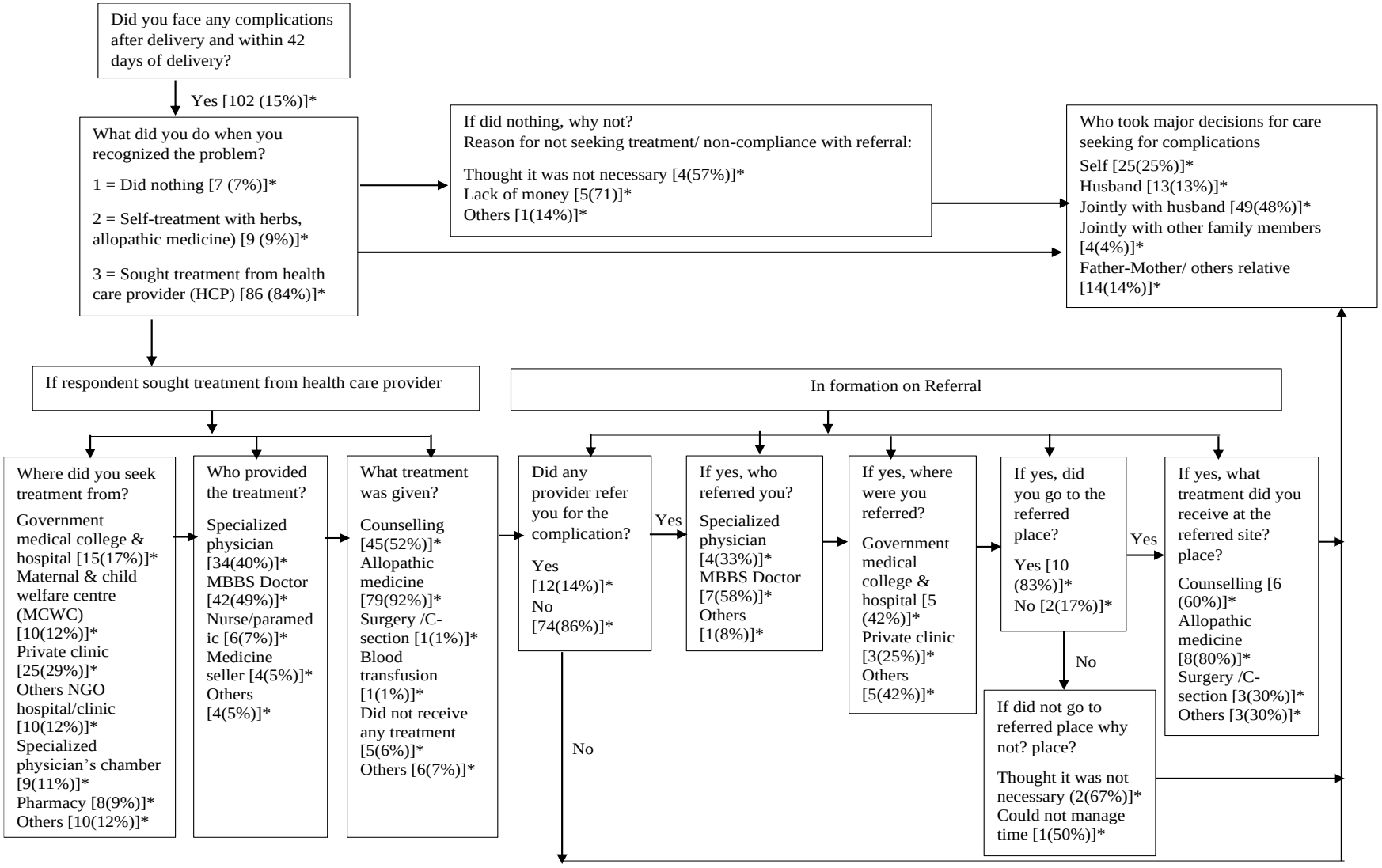
Postpartum complications

About 15% of women reported that they had a complication within 42 days of their last childbirth. The proportion of women with postpartum complications was highest in Saidpur (27%) and lowest in the Mirpur area (10%). **Table 3.27** below provides a comprehensive list of postpartum complications faced by the study participants after their most recent childbirth. The most common postpartum complications faced by the study participants after their most recent delivery were abdominal pain (33%), high fever (18%), severe headache (12%), and excessive bleeding (9%).

Table 3.24: List of the postpartum complication faced by study participants across the sites

List of complications	Overall	Mohammadpur	Mirpur	Saidpur
Severe headache	11.8	17.2	0.0	14.9
Blurry vision	3.9	6.9	0.0	4.3
High pressure	5.9	10.3	7.7	2.1
Excessive bleeding	8.8	3.5	11.5	10.6
Offensive discharge	0.0	0.0	0.0	0.0
High fever	17.7	24.1	26.9	8.5
Retained placenta	1.0	0.0	3.9	0.0
Convulsion	3.9	0.0	3.9	6.4
Perineal tear	1.0	3.5	0.0	0.0
Abdominal pain	33.3	27.6	11.5	48.9
Jaundice	0.0	0.0	0.0	0.0
Tetanus	0.0	0.0	0.0	0.0
Oedema	5.9	3.5	0.0	10.6
Don’t know	0.0	0.0	0.0	0.0
Others	49.0	48.3	65.4	40.4

Following is a flowchart (**Figure 3.17**) showing the treatment-seeking pattern for postpartum complications. Out of the 102 women facing postpartum complications, about 16 (15.7%) did nothing or took home remedies in response to the complications. The majority of the mothers with postpartum complications (84.3%) sought treatment from a health care provider. About 37% of them sought health care from a government facility, and 27% went to private clinics for the treatment of postpartum complications. About 88% received care from a physician (either specialist or an MBBS).



***Figures are provided as [n(%)]**

Figure 3.17: Treatment seeking pathways for postpartum complications

RESULTS: HEALTH STATUS OF INFANTS & CHILDREN

We enrolled 682 infants and children aged <2 years. Below are the characteristics of the infants and children enrolled in this survey (**Table 4.1**). Out of 682 enrolled infants and children, 351 (51.5%) were males, and 49% were aged >1 year. Only 4% of the enrolled infants and children were newborns, i.e., age <28 days.

Table 4.1: Basic characteristics of the infants and children enrolled

Variables	Overall	Mohammadpur	Mirpur	Saidpur
	N=682	N=240	N=265	N=177
Child age categories				
<28 days	3.8	3.8	1.7	3.2
28days-6months	25.8	19.6	19.8	21.9
6months-1yrs	21.7	31.7	32.2	28.3
1yrs-<2yrs	48.8	44.9	46.3	46.6
Sex of the child				
Male	51.5	52.3	52.1	49.7
Female	48.5	47.7	47.9	50.3

Infant and Young Child Feeding (IYCF)

Almost all of the children were breastfed at some point in their lives. Overall, 90% of the mothers started breastfeeding their children within 24 hours of birth. The highest proportion was Saidpur (93%) and lowest in the Mirpur area (86%). Overall, 92% of the mothers provided colostrum to their newborns. However, 29% of mothers reported that they offered pre-lacteals to the newborn, the proportion of which was highest in the Mirpur area (36%) and lowest in the Saidpur area (20%). Overall, 56% of the mother started providing extra food or drink to their children within six months of age. The highest proportion of such mothers was from the Mirpur area (64%), and the lowest was from the Mohammadpur area (47%). **Table 4.2** below has more details on early initiation of breastfeeding, prelacteals, and early weaning.

Table 4.2: Breastfeeding, pre-lacteals and early weaning

Traits	Overall	Mohammadpur	Mirpur	Saidpur
Ever breastfed	99.3	100.0	98.5	99.4
Started breastfeeding within 24 hrs of birth	89.5	91.2	86.0	92.7
Gave colostrum	92.2	95.4	89.1	92.7
Prelacteals given	28.5	26.8	35.9	19.8
Food or drink within six months after birth	55.8	46.9	64.2	55.4

Table 4.3 provides information on 24 hours dietary recall of the <2 years old children. The most common foods or drinks provided to the children in the preceding 24 hours of the survey were plain water (95%), breastmilk (90%), infant formula (22%), tinted, powder, or fresh animal milk (19%), thin semolina or suji (16%), and fruits juice, juice drink, or green coconut (15%). The proportion of children having infant formula was highest in the Mirpur area (31%) and lowest in the Saidpur area (8%). Besides, few children were provided vitamin or medicine syrup in the last 24 hours before the interview.

Table 4.3: 24 hours recall of child diet

Food and drink items	Overall	Mohammadpur	Mirpur	Saidpur
Breastmilk	89.7	92.0	88.2	89.8
Plain water	94.5	94.6	95.9	91.8
Sugar water	3.4	0.9	4.7	4.1
Infant formula Example: Cerelac, Lactogen	21.5	20.9	30.6	7.6
Tinted, powder, or fresh animal milk	19.3	20.2	12.9	28.6
Fruit Juice, Juice drink, green coconut	14.9	14.0	10.6	22.9
Yogurt	0.5	0.8	0.6	0.0
ORS	7.9	8.5	8.2	6.7
Thin soup	1.5	3.9	0.6	0.0
Thin semolina (*Suji*)	16.1	9.3	10.6	33.3
Vitamin/drop of medicine/syrup	11.4	15.5	9.4	9.5

Overall, 15% of the enrolled mother said that they heard, saw, or read any message related to breastfeeding or supplementary feeding in the preceding one month of the interview. The proportion of the mothers who heard, saw, or read such messages was highest in Saidpur (26%) and lowest in Mohammadpur (10%)..

Table 4.4: Messages related to breastfeeding or supplementary feeding

Messages	Overall	Mohammadpur	Mirpur	Saidpur
Radio	0.0	0.0	0.0	0.0
Television	11.0	12.5	6.7	13.0
News paper	3.0	4.2	0.0	4.4
Mobile telephone	3.0	4.2	0.0	4.4
Doctor/health worker/nurse	37.0	58.3	56.7	13.0
Poster/leaflet/billboard	1.0	0.0	3.3	0.0
Neighbor	47.0	16.7	30.0	73.9
Others	5.0	12.5	6.7	0.0

Table 4.4 below provides a list of the messages heard, seen, or read by the mothers within one month before the interview. The most common source of information or messages regarding breastfeeding or supplementary was the neighbors. Overall, 47% of the mothers received such information from their

neighbors. Overall, 37% of the mothers received messages regarding breastfeeding or supplementary feeding from a doctor, healthcare provider, or nurse, with the highest proportion of such mothers in Mohammadpur (58%) and lowest in the Saidpur area (13%). Besides, 11% of the mother said they received messages from television and 3% from newspapers

Table 4.5 provides details on the timeline of starting different food and drink items for the children. Most of the children were started eating or drinking the common food or drink items such as water (81%), egg (71%), semisolid foods such as smashed rice, potato, etc. (70%), pulses (70%), fish (68%), green leafy vegetable (68%), suji (69%), and chicken, beef, mutton (69%) within 1-12 months age of the children. About 9% of the infants were provided with formula milk within 30 days of life.

Table 4.5: Time of starting different foods to the infant and young children

Food or drinking items	0-30 days	1-12 months	Not yet given	Don't know
Water	6	80.9	12.9	0.2
Liquids without breast milk Sugar, glucose, tea, fruit juice etc.	0.4	56.1	43.2	0.3
Cow/goat/buffalo milk	1	40.7	57.9	0.4
Tinted, powder milk, Infant formula ie. Cerelac,lactogen	8.8	33.6	57.4	0.2
Suji, smashed rice	0.6	68.9	30.3	0.3
Semi solid foods smashed rice, hochpoch, smashed potato, ripe banana,	0.0	70.3	29.4	0.3
Solid food rice, wheat, puffed rice/flattened rice etc	0.0	66.7	33	0.3
Fish	0.0	68.7	31.1	0.2
Meat chicken, beef, mutton etc	0.0	66.1	33.6	0.3
Egg	0.0	71.5	28.3	0.2
Pluses lentil, peas, peas dal etc	0.0	70.2	29.7	0.2
Green leafy vegetables	0.0	67.8	32	0.2
Snacks Chanachur, Chips, biscuit, nuts etc	0.3	57.4	42.1	0.2
Monimix, Micronutrient powder	0.3	4.6	94.9	0.3

The median (IQR) of the number of eating solid, semi-solid, or soft foods other than water in the preceding 24 hours of the survey was 2(4) times. About 7% of the infants/young children consumed iron drops or tablets, including monimix or any other sprinkles, in the preceding 24 hours, with the highest proportion in Saidpur and lowest in the Mohammadpur area. In this population, the proportion of children ever taking food mixed with sprinkles such as monimix is low. Only 1% of the children were ever given food mixed with any sprinkles. **Table 4.6** provides more details on the status of the supplementary or complementary food given to the children.

Table 4.6: Status of supplementary or complementary foods or nutrients

Traits	Overall	Mohammadpur	Mirpur	Saidpur
Times of eating solid, semi-solid, or soft foods in the preceding 24 hours [Median (IQR)]	2.0 (4.0)	3.0 (4.0)	3.0 (3.0)	1.0 (3.0)
Took iron drops or tablets including sprinkles/monimix in the preceding 24 hours	7.3	4.6	5.7	13.6
Consumed food with added nutrient powder or sprinkles/Monimix in last 7 days	0.7	0.8	0.4	1.1
Consumed food with added nutrient powder or sprinkles/Monimix ever	1.0	2.1	0.4	0.6

Essential newborn care

Overall, 86% of the newborn received essential newborn care (ENC) in this population. Figure 4.1 compared the proportion across three areas. The highest proportion of the newborn receiving ENC was in Saidpur (98%), and the lowest was in the Mirpur area (80%).

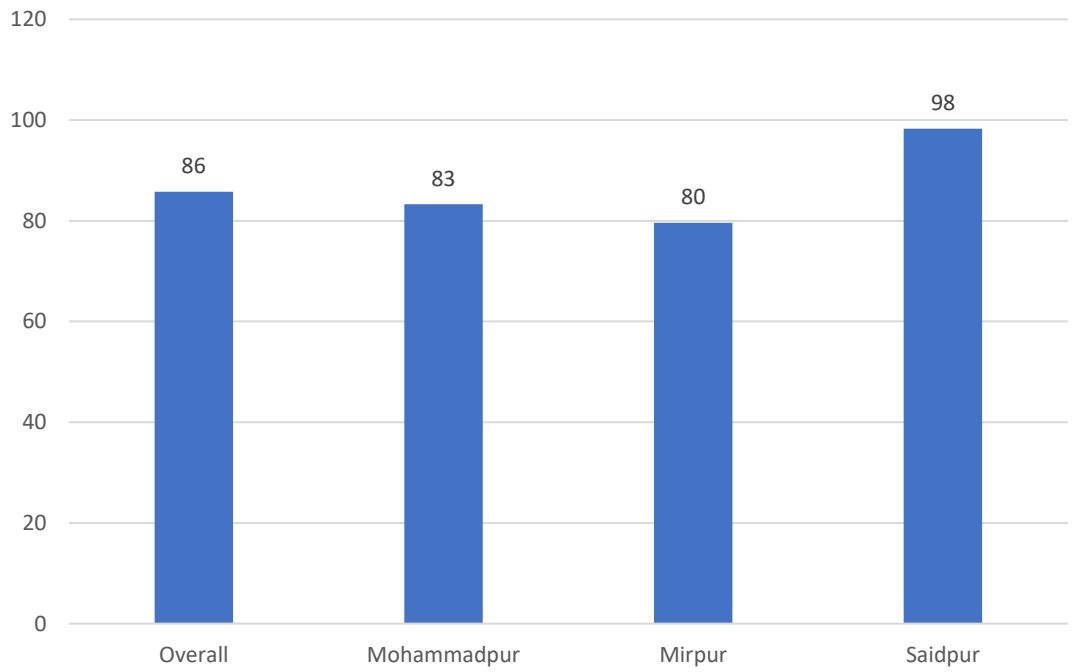


Figure 4.1: Status of essential newborn care received by study sites

The most common ENCs were wiping with a clean, dry cloth (98%), checking if the baby was crying or not (96%), wrapping with a clean, dry cloth (96%), and checking if the baby was breathing or not (91%). The proportion of newborns receiving essential newborn care was highest in the Saidpur area compared to the other two areas. Table 4.7 provides more details on essential newborn care across the sites.

Table 4.7: Status of essential newborn across the study sites

Essential newborn care	Overall	Mohammadpur	Mirpur	Saidpur
Wiping baby with a clean, dry cloth	97.8	95.5	98.6	99.4
Checking color of baby	71.9	53.3	72.5	92.5
Checking whether the baby is breathing or not	90.9	83.9	91.9	97.7
Checking whether the baby is crying or not	96.1	94.0	96.7	97.7
Wrapping with clean, soft cloth including head	95.9	90.5	98.1	99.4
Initiate breastfeeding within one hour of birth	67.3	64.3	54.0	86.8
Cutting cord with sterilized blade*	61.1	62.8	68.7	50.0
Tying cord with sterilized thread*	57.0	61.8	69.7	36.2
Others	12.5	21.1	14.2	0.6

*A large number could not tell if sterilized blade/thread was used or not because of facility delivery

Table 4.8 below provides the information on the facilities or place the mothers or the families visited to receive ENCs for their newborns. About 36% visited government health facilities, 31% visited private facilities such as a private medical college hospital or a private clinic, and about 19% visited NGO hospitals or NGO clinics. About 11% of the respondents said they managed ENC at their home set up.

Table 4.8: Place of receiving essential newborn care by study sites

Place of essential newborn care	Overall	Mohammadpur	Mirpur	Saidpur
Government medical college & hospital	12.8	22.1	5.2	11.5
Government specialized hospital	0.0	0.0	0.0	0.0
District hospital	1.2	0.0	2.4	1.2
Upazila/thana health complex	1.2	0.0	0.5	3.5
Maternal & child welfare centre MCWC	20.6	60.3	0.0	0.0
Private medical college & hospital	1.2	1.5	1.0	1.2
Private clinic	31.3	6.0	54.0	32.8
Others NGO hospital/clinic	18.5	4.0	18.0	35.6
Specialized physician's chamber	0.7	0.0	1.0	1.2
Pharmacy	0.2	0.0	0.0	0.6
At home	10.8	5.5	16.1	10.3
Don't know	0.3	0.5	0.0	0.6
Can't remember	0.0	0.0	0.0	0.0
Others	2.1	1.0	2.4	2.9

Table 4.9 below provides information on the providers from whom the mothers or the families received ENC for their newborns. More than half of the families (53%) received ENCs from a qualified doctor (specialized physician or MBBS doctor), and 48%% received it from a nurse or a paramedic or a similar government provider. Receiving ENC from qualified doctors such as a specialist or MBBS was highest in Mohammadpur (65%) and lowest in Mirpur (36%). Besides, about 12% of the newborn received ENC from trained or untrained traditional birth attendants. The proportion of newborns receiving ENC

from traditional birth attendants was highest in the Mirpur area (19%) and lowest in the Mohammadpur area (6%).

Table 4.9: Providers of receiving last antenatal care during the index pregnancy

Who provided the care?	Overall	Mohammadpur	Mirpur	Saidpur
Specialized physician	19.4	29.2	5.7	24.7
MBBS Doctor	33.1	36.2	30.3	32.8
Nurse/paramedic/FWV/FWA	47.6	48.2	49.3	44.8
BRAC Shasthya Shebika	1.7	0.0	4.7	0.0
BRAC Shasthya Karmi	1.2	0.0	3.3	0.0
NGO Health Workers	0.9	1.5	1.0	0.0
Traditional trained birth attendant (TTBA)	8.1	3.5	14.7	5.2
Trained birth attendant (TBA)	3.8	2.0	4.3	5.2
Village doctor	0.7	0.5	0.5	1.2
Homeopath	0.2	0.0	0.5	0.0
Medicine seller	0.3	0.0	0.5	0.6
Pusti apa (CNO/CNP)	0.0	0.0	0.0	0.0
Kabiraj	0.0	0.0	0.0	0.0
Pir/fakir	0.0	0.0	0.0	0.0
Don’t know	0.7	1.5	0.5	0.0
Can’t remember	0.0	0.0	0.0	0.0
Others (Specify)	1.2	1.0	1.9	0.6

Low birth weight

The median reported birth was 3 kgs, with 50% of the children were weighed between 2.5 to 3.3 kgs. About 25% of the babies had a birth weight of less than 2.5 kg, i.e., low birth weight. However, according to the statement given by the mothers, 21% of the babies had low birth weight (LBW). The proportion of babies with low birth weight was highest in Saidpur (24%) and lowest in the Mirpur area (16%). The median measurement time after birth with IQR was 5 (1,15) hours in Mohammadpur, 1 (1,5) hour in the Mirpur area, and 15 (10, 20) hours in the Saidpur area. **Table 4.10** provides more on this.

Table 4.10: Self-reported birth weight of the babies

Traits	Overall	Mohammadpur	Mirpur	Saidpur
Self-reported birth weight [Median (IQR)] in Kg	3(2.5,3.3)	3(2.5,3)	3(2.5,3.3)	3(2.5,3.5)
Weight taken after birth in hours	5(1,15)	5(1,5)	1(1,5)	15(10,20)
Self-reported weight (in category)				
Normal weight	74.8	69.1	78.5	75.5
Low birth weight	20.6	23.7	16.2	23.9
Don’t know	4.7	7.2	5.3	0.6

The most special care given for an LBW baby was covering the baby, including its' head with a soft, clean cloth (91%), frequent breastfeeding (83%), and skin-to-touch (76%). Keeping the baby touching the mothers' skin was highest in the Saidpur area (85%) and lowest in the Mohammadpur area (64%). About 11% of the participants said they did nothing as special care for the low birth weight babies. About 41% of the mothers said that they washed hands before holding an LBW baby. However, the proportion of mothers washing hands before holding an LBW baby was highest in the Saidpur area (49%) and lowest in the Mohammadpur area (31%). **Table 4.11** provides more details on the special care given to the LBW babies across the sites.

Table 4.11: Special care given for the low birth weight babies

Special care given for the babies with LBW	Overall	Mohammadpur	Mirpur	Saidpur
Did nothing	10.7	16.7	15.0	0.0
Breastfed within one hour of birth	55.4	52.4	42.5	71.8
Frequent breastfeeding	82.6	81.0	82.5	84.6
Covered the baby, including head, with a soft clean cloth	90.9	78.6	97.5	97.4
Feed expressed milk if the baby couldn't suckle	43.8	23.8	32.5	76.9
Keep the baby with mother skin	76.0	64.3	80.0	84.6
Not putting anything on the umbilicus	34.7	19.1	27.5	59.0
Bath within 7 or after 7 days	23.1	21.4	7.5	41.0
Shaved hair after a month	33.1	23.8	30.0	46.2
Use baby jacket	0.0	0.0	0.0	0.0
Take to hospital for complications	29.8	11.9	22.5	56.4
Washing hand before touching the baby	40.5	31.0	42.5	48.7

Cord care

Table 4.12: Umbilical cord care across the study sites

Things put on umbilical cord	Overall	Mohammadpur	Mirpur	Saidpur
Nothing	24.8	26.8	32.5	10.7
Antibiotic powder/ointment	6.0	3.8	7.6	6.8
Antibiotic dettol/savlon/hexisol	4.3	2.9	4.2	6.2
Spirit/alcohol	0.4	0.0	1.1	0.0
Turmeric powder	0.3	0.8	0.0	0.0
Boric powder	20.1	23.4	14.7	23.7
Talcom powder	1.8	2.5	1.1	1.7
Gentian violet	0.6	0.4	0.0	1.7
Don't know	11.0	10.5	15.5	5.1
Don't remember	1.0	2.9	0.0	0.0
Others	29.7	25.9	23.4	44.1

Table 4.12 listed the materials put on the umbilical cord after cutting and clamping it. In about 25% of the cases, mothers put nothing on the umbilical stump, which was highest in Mirpur (33%) and lowest in the Saidpur area (11%). The most common materials applied were Borik powder (20%), antibiotic powder or ointment (6%), Dettol/Savlon/Hexisol (4%), and talcom powder (2%).

First food after birth

The most common foods given to the baby immediately after birth was honey (45%), colostrum (20%), breast milk after expressing out colostrum (7%), sugar water (10%), and milk (other than breast milk) (6%). Providing honey immediately after birth was highest in the Mirpur area (50%) and lowest in the Saidpur area (40%). Providing sugar water was highest in the Mirpur area (15%) and lowest in the Saidpur area (3%). **Table 4.13** below provides more details on the foods/drinks given to the babies as a first thing after birth.

Table 4.13: First food/drink given to the baby after birth

What was your newborn first fed after birth?	Overall	Mohammadpur	Mirpur	Saidpur
Milk Other than breast milk	6.2	3.1	7.4	8.6
Breast milk after expressing colostrum	7.2	18.8	1.1	2.9
Honey	45.4	42.2	49.5	40.0
Sugar water	9.8	6.3	14.7	2.9
Colostrum	20.1	18.8	20.0	22.9
Others	11.3	10.9	7.4	22.9

Weaning

Overall, 13% of the children were still on exclusive breastfeeding, and they did not start taking extra food at the time of the survey. Among the children who already started taking additional foods, 30% began before completing their six months. About 70 of the children began taking extra foods during 6-9 months of age. The rest, 1.2%, started taking additional food at or after nine months (Table 4.14).

Table 4.14: Time of initiation of additional food other than breast milk

Age of the child	Overall	Mohammadpur	Mirpur	Saidpur
0-5 months	29.7	37.6	26.8	24.2
6-8 months	69.1	61.9	70.6	75.8
≥9 months	1.2	0.5	2.6	0.0

The most common foods or drinks which were given to the child to start weaning were suji/*sagu*/barley/rice powder (49%), mashed kichudi (46%), egg (44%), formula milk (20%), and

cow/goat milk (17%). **Table 4.15** provides a detailed list of the foods/drinks used to start weaning across the study area.

Table 4.15: Types of weaning food/drink across the study sites

Types of weaning food/drink	Overall	Mohammadpur	Mirpur	Saidpur
Suji/Sagu/barley/Rice powder	49.1	48.8	38.5	66.5
Egg	43.7	45.9	35.2	54.2
Smashed banana	11.3	14.0	12.2	6.5
Mashed *Khichuri*	46.0	43.0	43.3	54.2
Soft rice	14.6	18.8	19.8	0.7
Firni	2.8	2.4	4.9	0.0
Cow/goat milk	17.2	8.7	5.3	47.7
Formula milk	20.0	20.8	31.6	0.7
Fruit/fruit juice	9.5	6.3	4.5	21.9
Don't remember	1.2	2.4	0.8	0.0
Others	36.0	41.6	34.0	31.6

Birth asphyxia

Among the babies with reported birth asphyxia, the most common problems were difficulty breathing (67%), slow breathing (89%), and blue coloration of skin (11%). Table 4.16 compared the magnitude of the problems across the study sites. Overall, 6% of the babies experience breathing problems immediately after birth, with the highest proportion was in the Saidpur area (8%), and the lowest was in the Mirpur area (3%).

Table 4.16: Problems faced by the children with birth asphyxia

Signs/Symptoms of birth asphyxia	Overall	Mohammadpur	Mirpur	Saidpur
Did not cry	0.0	0.0	0.0	0.0
Difficulty breathing	66.7	60.0	100.0	66.7
Slow breathing	88.9	80.0	100.0	100.0
Blue coloration of skin / Cyanosis	11.1	20.0	0.0	0.0

All of the babies with birth asphyxia across the sites received at least one health care visit. About 56% of the babies received care from a specialist physician. The highest proportion was in Mirpur (100%) and lowest in the Saidpur area (33%). Other providers who treated/managed the baby with birth asphyxia were an MBBS doctor (22%), nurse/paramedic (11%), and trained traditional birth attendants (11%). The most common things done to the babies with birth asphyxia to help them breathe by cleaning mouth and nose (78%), mouth to mouth breathing (67%), and tapping the feet (56%). **Table 4.17** compared care-seeking of the birth asphyxia babies across the sites.

Table 4.17: Care seeking for birth asphyxia – providers and treatment

Care seeking for birth asphyxia	Overall	Mohammadpur	Mirpur	Saidpur
Health care providers				
Specialized physician	55.6	60.0	100.0	33.3
MBBS Doctor	22.2	20.0	0.0	33.3
Nurse/paramedic	11.1	0.0	0.0	33.3
Trained birth attendant TBA	11.1	20.0	0.0	0.0
Services provided				
Wipping body with clean cloth	0.0	0.0	0.0	0.0
Tapping under the feet	55.6	40.0	100.0	66.7
Wrapping baby with clean cloth	0.0	0.0	0.0	0.0
Cleaning mouth and nostrils	77.8	60.0	100.0	100.0
Mouth to mouth breathing	66.7	60.0	100.0	66.7
Referred baby to hospital	11.1	20.0	0.0	0.0
Others	33.3	60.0	0.0	0.0

Neonatal sepsis

Table 4.18 compared the magnitude of the problems due to neonatal sepsis across the study sites. Overall, 13% of the babies suffered from neonatal sepsis. The proportion of babies with neonatal sepsis was highest in the Saidpur area (20%) and lowest in the Mirpur area (11%). Among the babies with reported neonatal sepsis, the most common problems were fever (53%), fast breathing (28%), chest indrawing (24%), and inability to suck milk (21%).

Table 4.18: Problems faced by the children with neonatal sepsis

Signs/symptoms of neonatal sepsis	Overall	Mohammadpur	Mirpur	Saidpur
Unable to suck	20.5	12.0	32.1	17.1
Lethargic or unconscious	5.7	8.0	7.1	2.9
Chest indrawing	23.9	24.0	25.0	22.9
Convulsion	2.3	0.0	3.6	2.9
Fever	53.4	40.0	50.0	65.7
Hypothermia	4.6	8.0	0.0	5.7
First breathing	28.4	36.0	35.7	17.1
Others	46.6	52.0	42.9	45.7

The most common provider who provided treatment to babies with neonatal sepsis were specialized physicians (41%), MBBS doctors (25%), and homeopaths (20%). The proportion of qualified physicians who treated neonatal sepsis was highest in Mohammadpur (89%) and lowest in Saidpur (46%). Among other providers were medicine sellers (12%) and village doctors (4%). The most common treatment provided to babies with neonatal sepsis were allopathic medicine (74%) and

homeopathic medicines (20%). **Table 4.19** below demonstrates care-seeking of neonatal sepsis across the sites.

Table 4.19: Care seeking for neonatal sepsis– providers and treatment

Care seeking for neonatal sepsis	Overall	Mohammadpur	Mirpur	Saidpur
Health care providers				
Specialized physician	40.7	57.1	28.6	37.1
MBBS Doctor	25.3	32.1	39.3	8.6
Nurse/paramedic	1.1	0.0	0.0	2.9
BRAC Shasthya Shebika	0.0	0.0	0.0	0.0
BRAC Shasthya Karmi	0.0	0.0	0.0	0.0
NGO Health Workers	0.0	0.0	0.0	0.0
Traditional trained birth attendant TTBA	0.0	0.0	0.0	0.0
Trained birth attendant TBA	0.0	0.0	0.0	0.0
Village doctor	4.4	7.1	3.6	2.9
Homeopath	19.8	3.6	7.1	42.9
Medicine seller	12.1	7.1	25.0	5.7
Pusti apa CNO/CNP	0.0	0.0	0.0	0.0
Kabiraj	0.0	0.0	0.0	0.0
Pir/fakir	1.1	0.0	0.0	2.9
Others	1.1	0.0	0.0	2.9
Services provided				
Allopathic medicine	73.6	82.1	85.7	57.1
Homeopathic medicine	19.8	3.6	10.7	40.0
Referred to hospital	13.2	28.6	10.7	2.9
Others	8.8	10.7	0.0	14.3

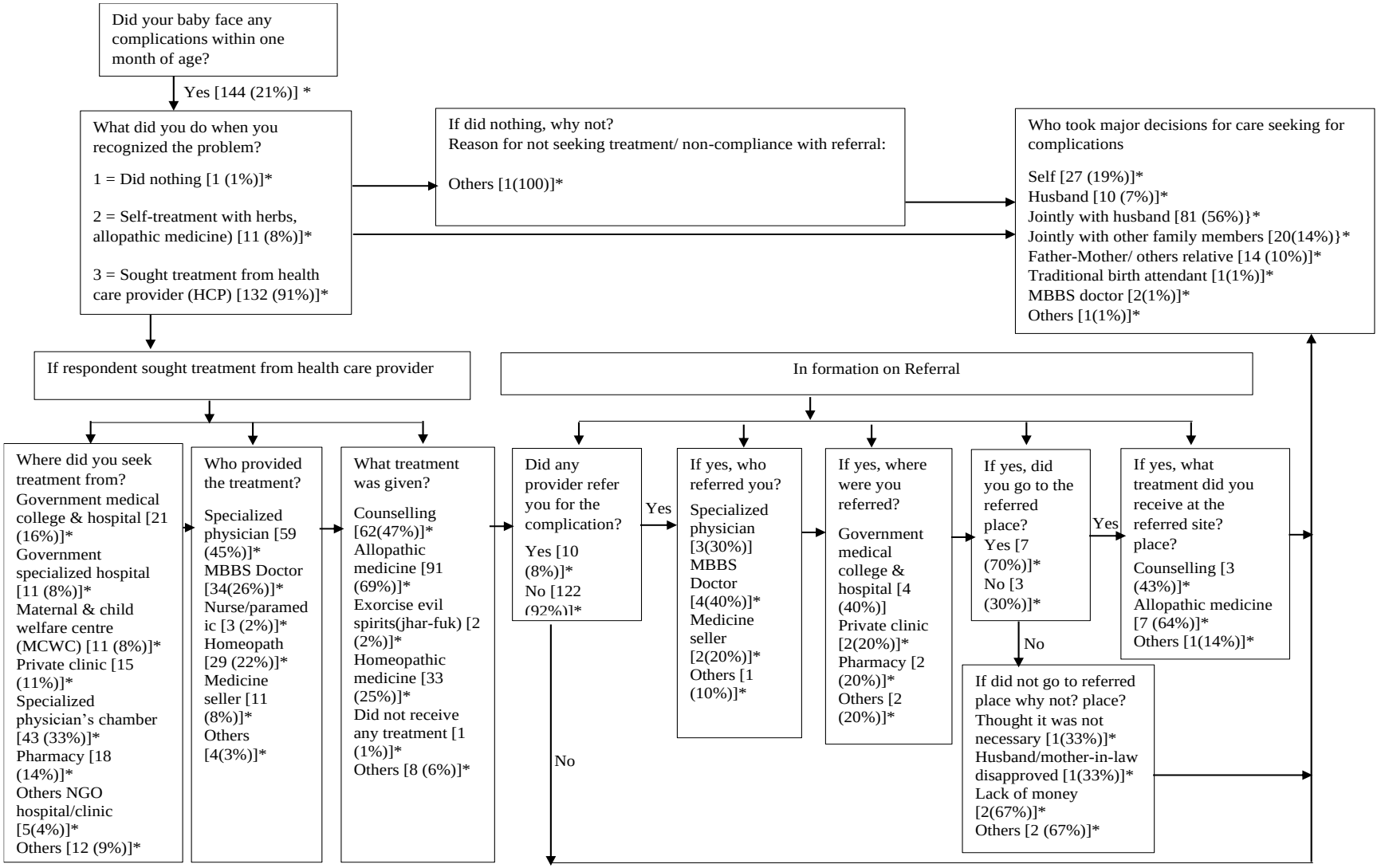
Neonatal complications

About 21% of the mothers said their babies faced a complication within one month after birth. The proportion of babies with neonatal complications was highest in Saidpur (38%) and lowest in the Mirpur area (13%). **Table 4.20** below shows the types of complications faced by the babies within their first month of life. In general, the most common neonatal complications were fever (48%), difficulty breathing (19%), inability to suck (17%), and distended abdomen (11%).

Table 4.20: List of neonatal complications by study sites

Complications	Overall	Mohammadpur	Mirpur	Saidpur
Inability to suck	16.9	9.8	26.5	16.4
Infected umbilicus	7.8	4.9	14.7	6.0
Lethargic	2.8	7.3	0.0	1.5
Red eye/dust/fungus in eye	4.9	2.4	2.9	7.5
Jaundice for 14 days	9.2	7.3	8.8	10.5
Shivering/ low temperature	9.2	17.1	11.8	3.0
Blisters/Skin lesions	5.6	0.0	2.9	10.5
Fever	47.9	39.0	32.4	61.2
Difficult/ fast breathing or pneumonia	19.0	29.3	20.6	11.9
Convulsion	3.5	4.9	5.9	1.5
Chest in drawing	9.2	9.8	11.8	7.5
Distended abdomen	10.6	12.2	11.8	9.0
Severe Vomiting	9.9	4.9	11.8	11.9
Diarrhoea	5.6	12.2	5.9	1.5
Others	27.5	29.3	23.5	28.4

Following is a flowchart (**Figure 4.2**) showing the treatment-seeking pattern for neonatal complications. Out of the 144 babies with complications, about 12 (8%) received nothing or only home remedies. The majority of the mothers with postpartum complications (92%) sought treatment from a health care provider. About 35% of them received health care from a government facility, 33% went to private chambers of specialized physicians, and 11% went to private clinics.



***Figures are provided as [n(%)]**

Figure 4.2: Care-seeking pathways for neonatal complications

Decision making on care-seeking for neonatal complications

According to the data collected from the low-income settlements of Dhaka and Saidpur areas of Bangladesh, in most of the cases (56%), the mother and her husband jointly decided in seeking care for neonatal complications, with the highest proportion of joint decision was made in the Mohammadpur area (71%) and lowest in the Saidpur area (40%). Overall, 19% of the mothers decided solely by themselves about seeking care for their babies with neonatal complications. In 24% of the cases, the decision was jointly made with families, relatives, or friends. **Figure 4.3** shows how decisions were made for seeking care for babies with neonatal complications by study sites.

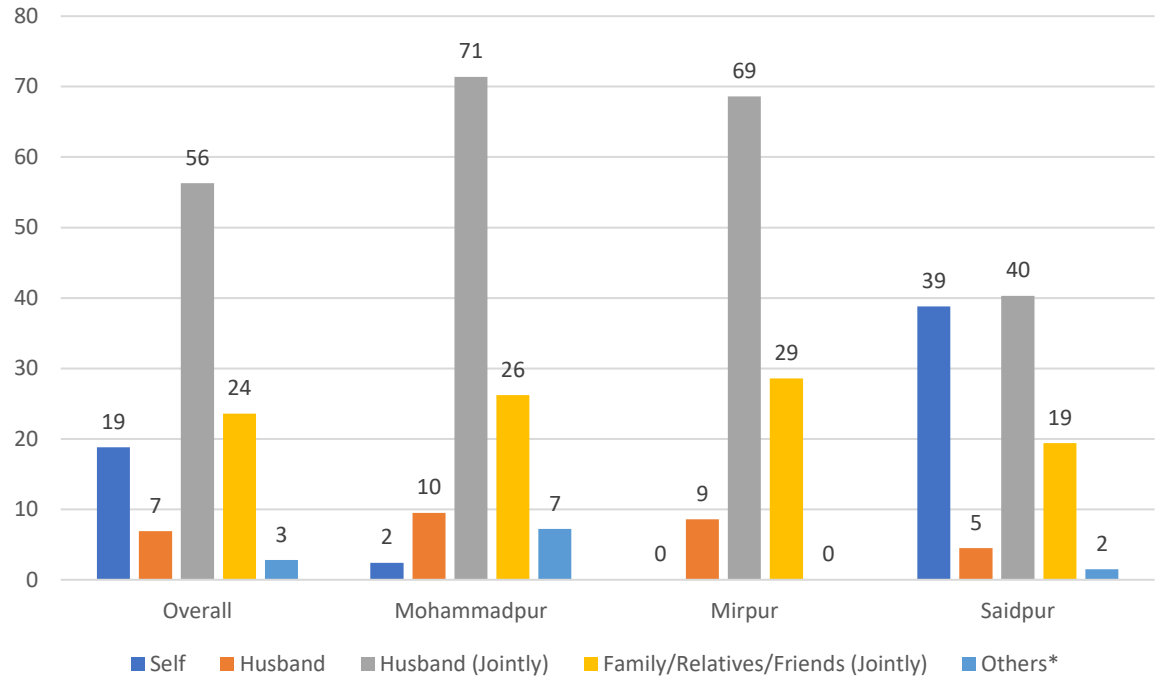


Figure 4.3: Decision making on care for neonatal complications

Vaccination status of the children

Figure 4.4 compared overall vaccine coverage across three study sites. Overall, 95% of <2 years old children received at least one dose of any of the vaccines. The proportion of such children was highest in the Saidpur area (98%) and lowest in the Mohammadpur area (93%). Among those who received any of the vaccines, 85% had the vaccine cards. Availability of vaccine cards was highest in Saidpur (98%) and lowest in Mohammadpur (77%).

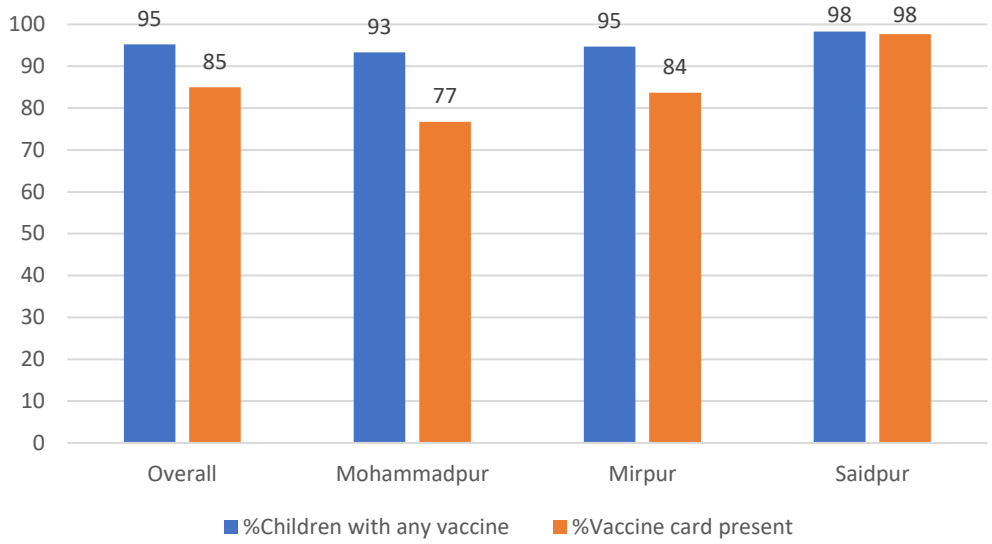


Figure 4.4: Vaccination status of the infants and <2 old children

Table 4.21 provides the percentage of children given individual doses of the vaccines available in the Expanded Program on Immunization (EPI). Overall, 80% of the children received one dose of BCG vaccine, which was highest in Saidpur (96%) and lowest in Mohammadpur (70%). Overall, 81%, 75%, and 69% of the eligible child receive the 1st, 2nd and 3rd doses, respectively, of the PENTA vaccine. About 81%, 74%, and 67% of the eligible children received 1st, 2nd and 3rd doses, respectively, of Oral Polio Vaccine (OPV). Overall, 81%, 75%, and 68% of the eligible children received 1st, 2nd, and 3rd doses of Pneumococcal Conjugate Vaccine (PCV).

Table 4.21: Status of individual vaccine doses given to the children

Vaccine doses	Eligible age	Overall	Mohammadpur	Mirpur	Saidpur
BCG1	0 days	79.5	69.6	77.4	96.1
Penta1	6 weeks	81.3	71.5	78.7	98.3
Penta2	10 weeks	74.9	62.8	72.9	94.1
Penta3	14 weeks	68.5	58.6	62.9	89.6
OPV1	6 weeks	81.0	71.1	78.7	97.7
OPV2	10 weeks	73.7	62.8	69.7	94.1
OPV3	14 weeks	67.0	58.6	59.2	89.6
PCV1	6 weeks	81.3	71.5	79.1	97.7
PCV2	10 weeks	75.1	63.2	72.9	94.1
PCV3	14 weeks	68.3	58.6	62.5	89.6
IPV1	6 weeks	80.7	71.1	77.9	97.7
IPV2	14 weeks	65.1	57.6	60.8	81.0
MR1	9 months	61.4	47.1	58.8	82.1
MR2	15 months	50.4	47.5	47.8	57.8

Besides, 81% and 65% of the eligible children received 1st and 2nd doses of Injectable Polio Vaccine (IPV). Overall, 61% and 50% of the eligible children received the 1st and 2nd dose of the Measles and Rubella (MR) vaccine, respectively.

Family care indicators (FCI)

Overall, no newspaper or magazine was available in about 96% of the households of selected low-income settlements in Dhaka and Saidpur areas of Bangladesh. The unavailability of newspapers or magazines was highest in the Mirpur area (99%) and lowest in the Saidpur area (91%). Only 4% of the households had at least one newspaper or magazine at the time of the interview (**Table 4.22**).

Table 4.22: Number of newspapers or magazines available at the residence of <2 old children

Number of magazines and newspapers at home	Overall	Mohammadpur	Mirpur	Saidpur
None	95.5	95.9	99.1	90.5
1-2	1.5	2.8	0.0	1.8
3-5	0.8	0.5	0.5	1.8
6 or more	2.2	0.9	0.5	5.9

Overall, 82%, 44%, 27%, and 22% of the parents took the child outside of the home, sang a song to the child, told stories, and read books or saw picture books together with the child, respectively, in preceding three days of the interview date. The proportions of these activities favoring child development were highest in the Sairpur area and lowest in the Mirpur area, except only for taking out the child, which was lowest in the Mohammadpur area. Figure 4.5 below shows the child developmental activities in the study area.

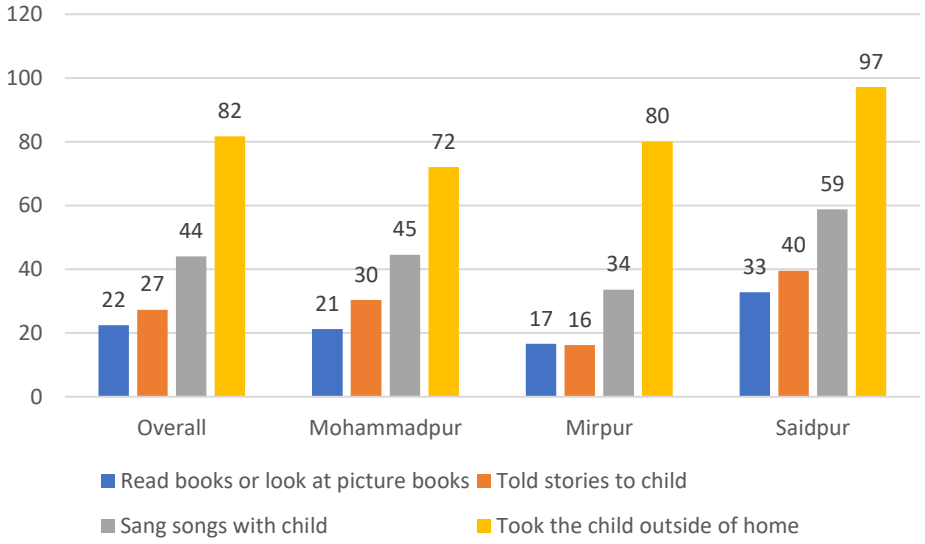


Figure 4.5: Activities with the child in the preceding three days of the interview

RESULTS: WATER, SANITATION, AND HYGIENE

Water supply

Public tap (43%) followed by shared tube well (19%) was the main source of drinking water for the households that participated in this study. In Mohammadpur (51%) and Mirpur (64%), most households collected drinking water from a public tap. However, participants from Saidpur did not drink public tap water at all (0%). In Saidpur, shared tube wells (46%) and household tube well (41%) were the main sources of drinking water (**Table 5.1**).

Table 5.1: Main source of water by area

WASH facilities	Overall	Mohammadpur	Mirpur	Saidpur
	N=682	N=240	N=265	N=177
Main sources of drinking water				
Piped to dwelling	11.5	20.4	8.7	3.4
Piped to yard/plot	1.8	0.8	3.0	1.1
Piped to neighbour	0.7	0.4	1.5	0.0
Public tap	42.6	50.8	63.6	0.0
Shared tube well	18.8	18.3	0.8	46.3
Household tube well	12.5	2.9	2.3	40.7
Dug well unprotected	0.2	0.4	0.0	0.0
Surface water Pond/ River/ Canal/Hawar/ Irrigation channels	0.3	0.0	0.4	0.6
Water tanker	0.9	0.4	1.5	0.6
Protected	0.2	0.4	0.0	0.0
Others	10.7	5.0	18.2	7.3

Overall, 40% of families had a water source within 30 feet of their household premises. In Mohammadpur, more than half of the participants had to travel >100 feet to collect water (53%) though nearly a quarter had access to water within 30 feet of their households (25%). In Mirpur, a similar proportion of the participants had a water source between 51-100 feet (33%) and >100 feet distance (32%), respectively; however, almost all of the households in Saidpur had a water source within 30 feet of their residence (92%) (**Figure 5.1**).

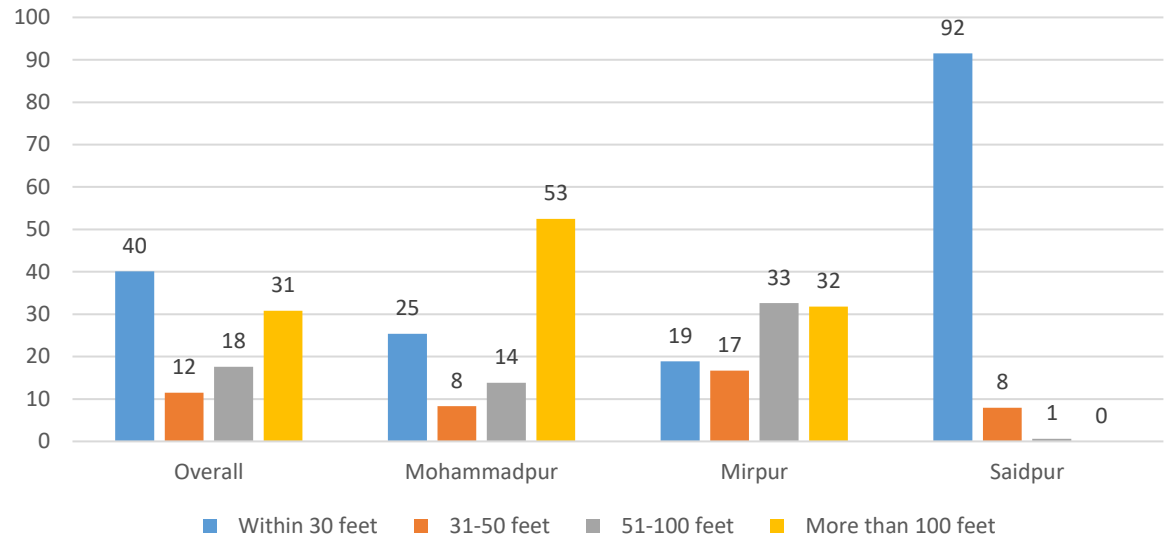


Figure 5.1: Distance of water sources from the household

The majority of the households whose main water source was the pipeline received water from Dhaka WASA (54%) and NGO pipeline (33%). In Saidpur, all households that used tube well water pipe water were connected with the source through a mini pipeline arranged by themselves (100%) (**Figure 5.2**).

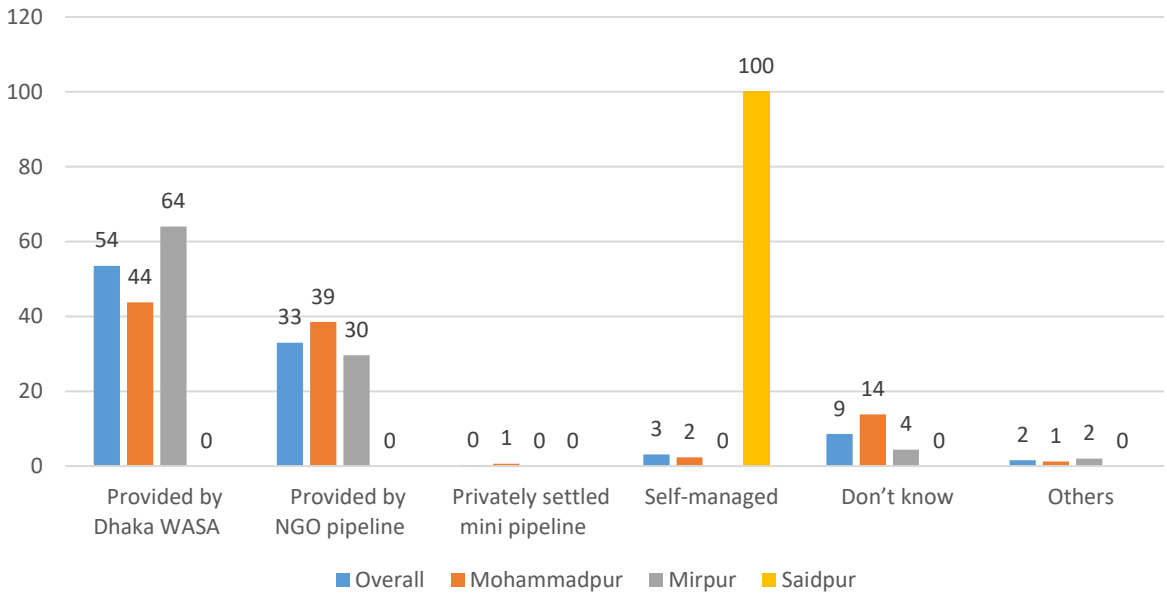


Figure 5.2: Sources of piped water (in case of piped water)

Among the households using tube well water, more than three-quarters had not tested the tube well for arsenic (75%), and the proportion was higher in Mirpur (88%). Almost all of the participants in Mohammadpur (81%) and Mirpur (92%) and all of the participants in Saidpur (100%) reported that water supply connection at their households was legal. However, 58.7% of households don't pay for

supplied water regularly, the practice is higher in Mohammadpur (94.3%). The majority of the households in Mohammadpur (84%) and Mirpur (64%) had a clean water supply. In contrast, the supplied water was somewhat clean in 54% of the households in Saidpur. In this study, 40% of participants reported that their households did not maintain 10-meter (3 feet) distance between tube well and toilet, and the proportion was highest in the Mirpur area (75%) (**Table 5.2**).

Table 5.2: Arsenic testing of tube well water, the legal status of supplied water, payment of supplied water, cleanliness of supplied water, and distance tube well and toilets

	Overall	**Mohammadpur**	**Mirpur**	**Saidpur**
	N=682	**N=240**	**N=265**	**N=177**
Arsenic testing for tube well water				
Yes	24.9	25.5	12.5	25.3
No	75.1	74.5	87.5	74.7
Legality of the water connection (in case of pipe water)				
Legal connection	87.0	80.5	92.1	100.0
Illegal connection	2.9	2.9	3.0	0.0
Don't know	10.1	16.7	4.9	0.0
Payment for supplied water				
Yes	41.3	5.8	69.5	100.0
No	58.7	94.3	30.5	0.0
Cleanliness of supplied water				
Yes	63.6	84.4	63.5	34.6
No	10.4	6.2	13.7	11.7
Somewhat clean	26.1	9.3	22.8	53.7
10 meter or 3 feet distance between tube well and toilet				
Yes	21.1	17.7	12.5	22.7
No	39.9	58.8	75.0	31.8
No pit latrine	39.0	23.5	12.5	45.5

Nearly three-quarters of the households in the Mohammadpur area (75%) and all of the households in the Saidpur area (100%) enjoyed continuous water supply throughout the day. In the Mirpur area, only 30% of households had an uninterrupted water supply, and more than one-third of the households received supplied water only in the morning and evening (34%) (**Figure 5.3**).

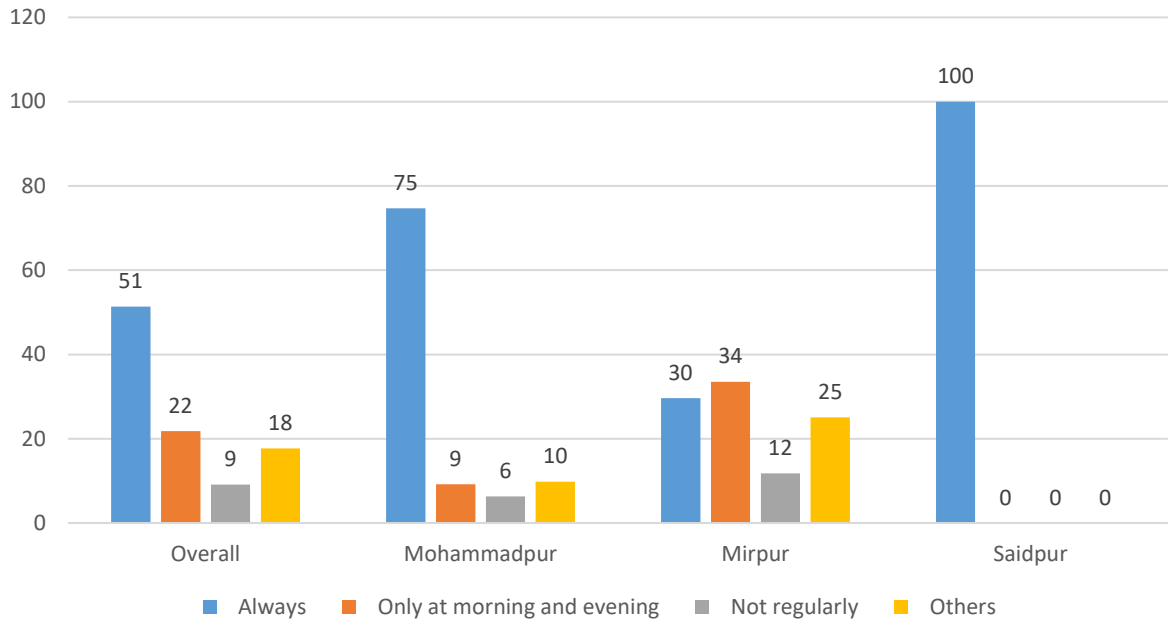


Figure 5.3: Availability of water supply at the household level

Almost all of the participants in Mohammadpur (96%), Mirpur (99%), and Saidpur (89%) reported that they covered water during storage at their households. The majority of the households in this study used shared water sources (70%), and the proportion was higher in Mirpur (80%). In Saidpur and Mohammadpur, nearly half (46%) and about one-third (31%) of the households reported using a single water source. Almost all of the participants in this study reported that they had soap in their households (99%), and they used it within the preceding 24 hours (100%) (**Table 5.3**).

Table 5.3: Storage of water, sharing of water sources and availability and use of soap by area

	Overall	**Mohammadpur**	**Mirpur**	**Saidpur**
	N=682	**N=240**	**N=265**	**N=177**
Covering of stored water				
Yes	95.5	95.8	99.2	89.3
No	3.8	3.3	0.8	9.0
Not applicable	0.7	0.8	0.0	1.7
Sharing of water source				
Single	30.5	31.3	19.7	45.8
Shared	69.5	68.8	80.3	54.2
Availability of soap				
Yes	99.0	97.9	99.6	99.4
No	1.0	2.1	0.4	0.6
Use of soap within the last 24 hours				
Yes	100.0	100.0	100.0	100.0

Overall, 58% of the households mentioned that their water source was shared among more than 15 households. In Mohammadpur (64%) and Mirpur (71%) area, a higher proportion of the households shared water source with >15 households; however, in Saidpur, the water source was shared between 1-5 households in most cases (78%) (**Figure 5.4**).

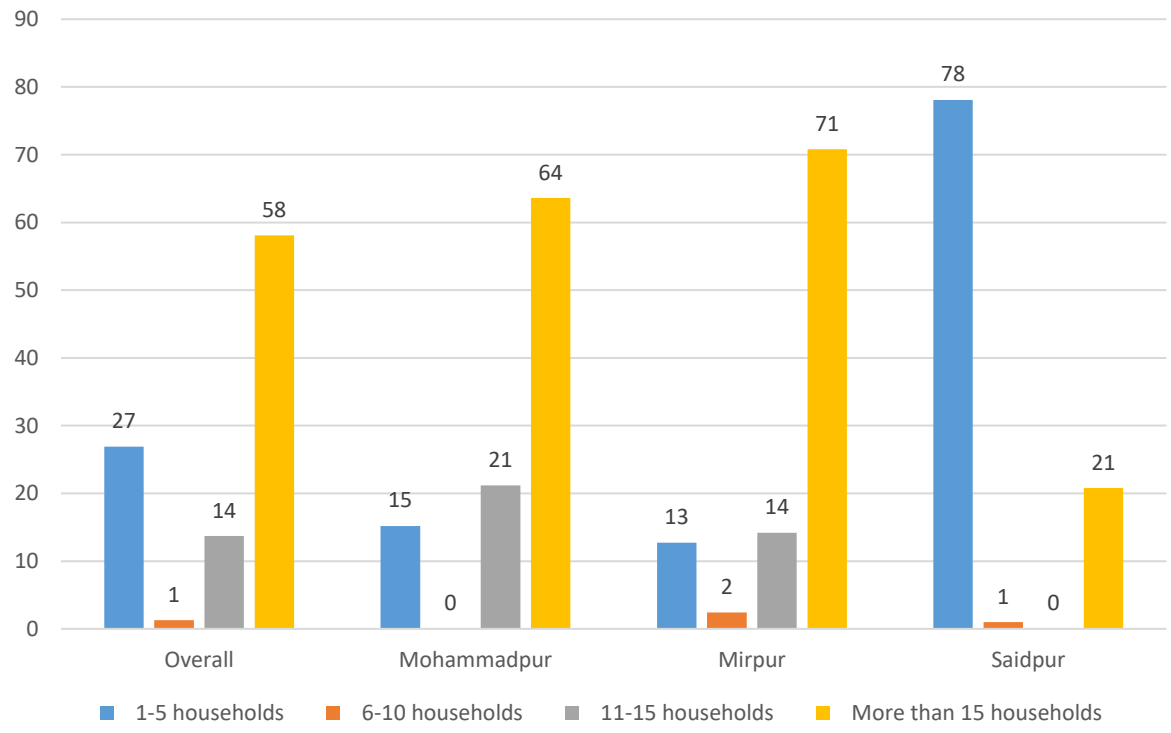


Figure 5.4: Proportion of households used shared water sources

Sanitation facilities

In this study, piped sewer system (64%) followed by ring slab with a water seal (23%) were the most common toilet types used by the participants. Almost all households used a piped sewer system in Mohammadpur (90%).. However, the households dwelling in the Saidpur region used a ring slab with a water seal (53%) and septic tank (39%) more frequently than other types of toilets. Among the households that took part in this study, shared toilets (34%) and communal toilets (26%) were more frequently used, and the proportion was similar across the three study sites. Around half of Mirpur participants (44%) and Saidpur (52%) reported that they shared their toilets with 1-5 households. In comparison, more than half of the households in the Mohammadpur region (52%) had to share their toilets with >15 other houses. Around half of the participants residing in Mohammadpur stated that they had to stay in a queue before entering the toilet (50%), though most participants from Mirpur did not have to do so (60%). In Saidpur, 37% of the participants had to queue sometimes before entering the toilet (**Table 5.4**).

Table 5.4: Toilet types, sharing status, household number sharing toilets, and queue system for using toilets

Toilet Facility	Overall	Mohammadpur	Mirpur	Saidpur
	N=682	N=240	N=265	N=177
Type of toilets available at households				
Piped sewer system	64.0	90.0	83.3	0.0
Septic tank	10.1	0.0	0.0	39.0
Ring slab with water seal	23.2	9.2	16.3	52.5
Ring slab without water seal	1.8	0.0	0.0	6.8
Hanging latrine	0.3	0.4	0.4	0.0
No facility bush/Open field/River pond side	0.2	0.4	0.0	0.0
Others	0.4	0.0	0.0	1.7
Sharing of toilet				
Not shared	39.9	38.8	44.7	34.5
Shared	34.4	34.6	34.9	33.3
Communal	25.7	26.7	20.5	32.2
Number of households sharing a toilet				
1-5 households	40.3	27.9	43.8	51.7
6-10 households	3.9	2.0	8.9	0.0
11-15 households	9.1	18.4	6.9	0.0
More than 15 households	46.7	51.7	40.4	48.3
Que system for shared toilets				
Yes	39.4	49.7	32.9	34.5
No	43.3	38.1	60.3	28.5
Sometimes	17.4	12.2	6.9	37.1

The majority of the study participants reported that the toilet was located within 30 feet of their household premises (54%). The proportion was highest and lowest in Saidpur and Mohammadpur region (Saidpur: 70%, Mohammadpur: 41%). In the Mohammadpur area, toilets of 28% and 14% of households were located 51-100 feet and >100 feet away from their households, respectively (**Figure 5.5**).

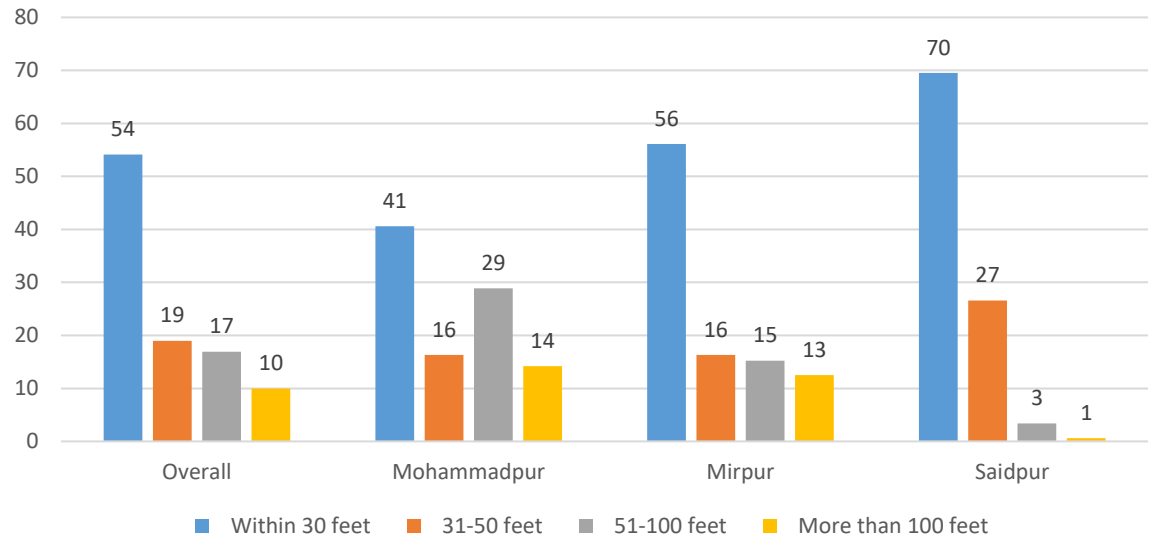


Figure 5.5: Distance between the toilet and household

Toilet facility for women

Around two-thirds of the households in the Mohammadpur area had a separate compartment for women in the shared/communal toilet (61%). However, the majority of the households in Mirpur (56%) and Saidpur (54%) did not have the facility. An equal number of male and female compartments within the shared or public toilet was available in more than half of the households in Mohammadpur (56%) and Saidpur (54%) but not in Mirpur (45%). Most shared or communal toilets had no arrangement to manage menstruation (e.g., basket, cloth washing facility) (79%). Overall, 27% of the households did not have water connection in the toilets; this proportion was highest in Saidpur, where about 53% did not have water connection in toilets. Around half of the participants reported that their toilet was clean (53%), and most of them said that they cleaned their toilets by themselves (71%). The toilet was somewhat clean in 46% of the households in Saidpur, and caretakers maintained cleanliness in 47% of the households in Mohammadpur. Almost all study participants conveyed that they wear shoes while entering the toilet (96%) (**Table 5.5**).

Table 5.5: Toilet facility for women

	Overall	Mohammadpur	Mirpur	Saidpur
	N=682	N=240	N=265	N=177
Availability of separate compartment for women in shared or public toilet				
Yes	50.6	61.2	43.8	45.7
No	49.4	38.8	56.2	54.3
Availability of equal number of male and female compartments in shared or public toilet				
Yes	51.1	55.8	44.5	53.5
No	48.9	44.2	55.5	46.6
Arrangement for managing menstruation in shared or public toilet				
Basket	17.6	13.6	19.9	19.8
Cloth washing arrangement	1.5	1.4	2.1	0.9
Nothing	78.5	78.2	78.1	79.3
Don't know	2.4	6.8	0.0	0.0
Availability of water connection in toilet				
Yes	62.9	63.3	72.7	47.5
No	37.0	36.7	26.9	52.5
Don't know	0.2	0.0	0.4	0.0
Cleanliness of the toilet				
Yes	53.2	52.5	64.0	37.9
No	19.4	25.4	16.3	15.8
Somewhat clean	27.5	22.1	19.7	46.3
Cleaning of shared toilet				
Done by ourselves	71.4	48.2	79.4	91.5
Clean by caretaker	26.5	47.0	20.7	6.8
Don't clean regularly	2.1	4.8	0.0	1.7
Use of shoe while going to the toilet				
Yes	96.2	95.8	93.9	100.0
No	3.8	4.2	6.1	0.0

Only 62.9% toilets have water connection; among the participants who had water connections in their toilets, the majority reported that water supply was always available (82%), and the proportion was highest in Saidpur (100%) (**Figure 5.6**). Around half of the toilets (53.2%) were found clean, the proportion was lowest in Saidpur (37.9%). In 71.4% participants reported that they clean their toilets by themselves.

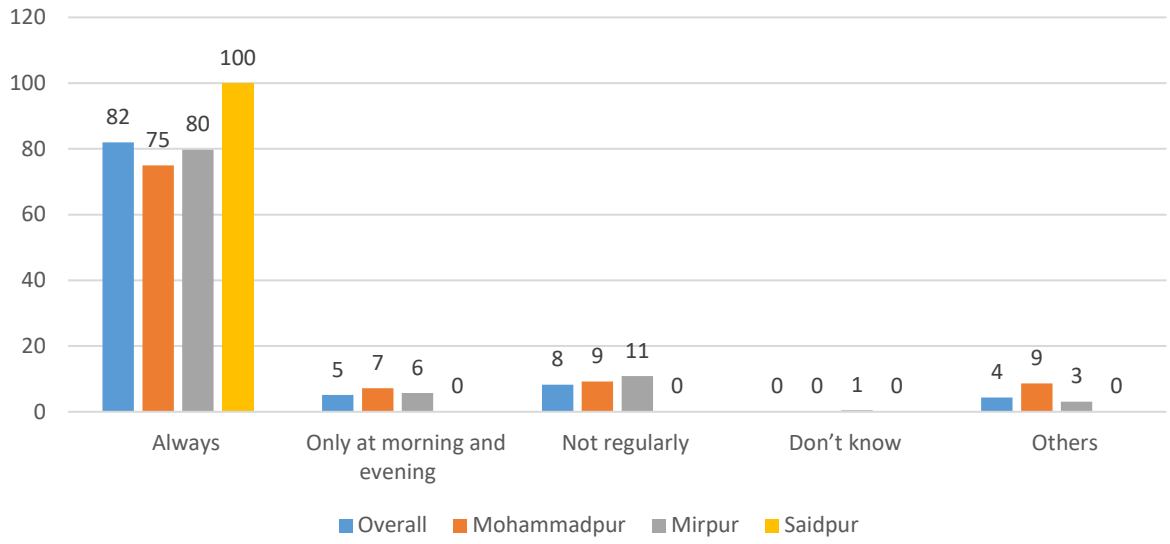


Figure 5.6: Duration of water availability in toilet

Hand-washing practice after using the toilet

Table 5.6: Hand-washing practices, materials, and devices by area

	Overall	Mohammadpur	Mirpur	Saidpur
	N=682	N=240	N=265	N=177
Place of washing hands				
Modern piped facilities in dwelling	5.6	9.2	5.7	0.6
Inside/near toilet facility	43.8	46.3	52.3	27.7
Inside/near kitchen/cooking place	7.9	12.9	8.7	0.0
Elsewhere in yard	3.5	4.6	4.6	0.6
Outside yard	1.0	0.8	0.8	1.7
Inside yard	37.4	24.6	27.7	69.5
No specific place	0.6	1.3	0.4	0.0
No permission to see	0.2	0.4	0.0	0.0
Availability of water in tape or container (after observation)				
Yes	97.9	97.5	97.3	99.4
No	2.1	2.5	2.7	0.6
Availability of tap or basin or bucket or sink				
Yes	92.7	89.5	97.7	89.7
No	7.3	10.6	2.3	10.3

The study participants from Mohammadpur and Mirpur region commonly washed hands inside or near toilet facility (Mohammadpur: 46%, Mirpur: 52%); however, participants from the Saidpur area usually

washed hands outside the yard (70%). Hand washing facilities with water (e.g., tap, basin, bucket, sink) were found available by data collectors in almost all households across the study sites (water supply: 98%, hand washing device: 93%) (**Table 5.6**).

Observation findings revealed that most participants from all three study sites used cleaning agents for washing hands after coming from the toilet (soap: 83%, detergent: 16%). However, some participants did not use any cleansing agent for this purpose (15%), and the proportion was higher in Saidpur (23%) (**Figure 5.7**).

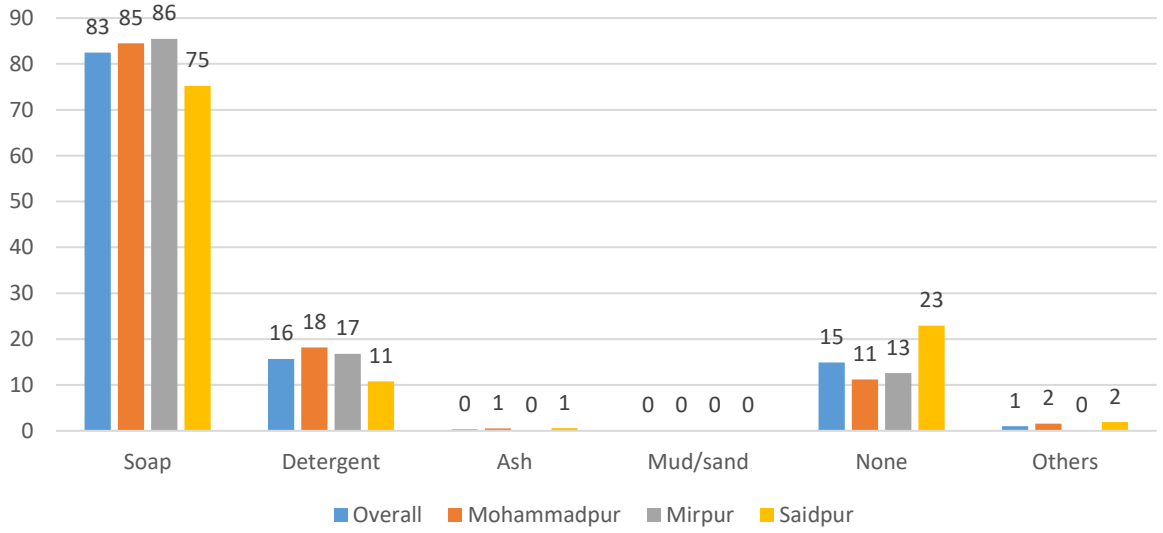


Figure 5.7: Availability of soap or detergent or locally available cleaning agents

Drainage system

Almost all of the study participants reported that they had a drainage system in their communities (98%), and the drainage system was cemented (pacca) (97%). Almost all households in Mohammadpur (98%) and Mirpur (86%) had running drainage systems. However, some of the drains were found either blocked and semi- collapsed. Water logging is common; especially during the rainly season. Almost a third of the study participants reported that there was waterlogging in the drainage system of their community (32%), and the proportion was higher in the Saidpur area (48%). The duration of waterlogging was also much higher in Saidpur (3±5 days) compared to that in Mohammadpur (2±1 days) and Mirpur (2±2 days) regions (**Table 5.7**).

Table 5.7: Drainage system by area

Drainage system	Overall	Mohammadpur	Mirpur	Saidpur
	N=682	N=240	N=265	N=177
Availability of drainage system				
Yes	98.4	99.6	97.4	98.3
No	1.6	0.4	2.7	1.7
Type of drainage system				
Katcha	3.1	0.8	4.3	4.6
Pacca	96.9	99.2	95.7	95.4
Waterlogging				
Yes	31.8	21.3	30.7	47.7
No	68.2	78.7	69.3	52.3
Duration of water logging (mean±SD)	2.4±3.5	1.6±1.3	1.8±2.1	3.4±4.9

Collection and disposal of household waste

The majority of the study participants stated that they used the basket for collecting household waste (68%). About 86% of the households dumped waste into a dustbin, and the proportion was highest in Mohammadpur (96%) and lowest in Saidpur (72%). Most of the respondents also reported that they had access to a place for dumping household waste (87%). However, removal of waste from the dumping points were found not regular. On the other hand, 22% of Saidpur households did not have a place for dumping waste (**Table 5.8**).

Table 5.8: Disposal processing by area

	Overall	Mohammadpur	Mirpur	Saidpur
	N=682	N=240	N=265	N=177
Use of basket for household waste collection				
Yes	68.3	62.1	73.1	69.5
No	31.7	37.9	26.9	30.5
Place of dumping household waste				
Into drain	3.2	2.9	4.9	1.1
Dustbin	85.8	95.8	85.6	72.3
Others	11.0	1.3	9.5	26.6
A designated place for dumping waste				
Yes	87.4	94.2	87.1	78.5
No	12.6	5.8	12.9	21.5

The majority of the respondents reported that they disposed of household waste daily (91%). However, some of the respondents from Saidpur conveyed that they removed household waste once a week (15%) (**Figure 5.8**).

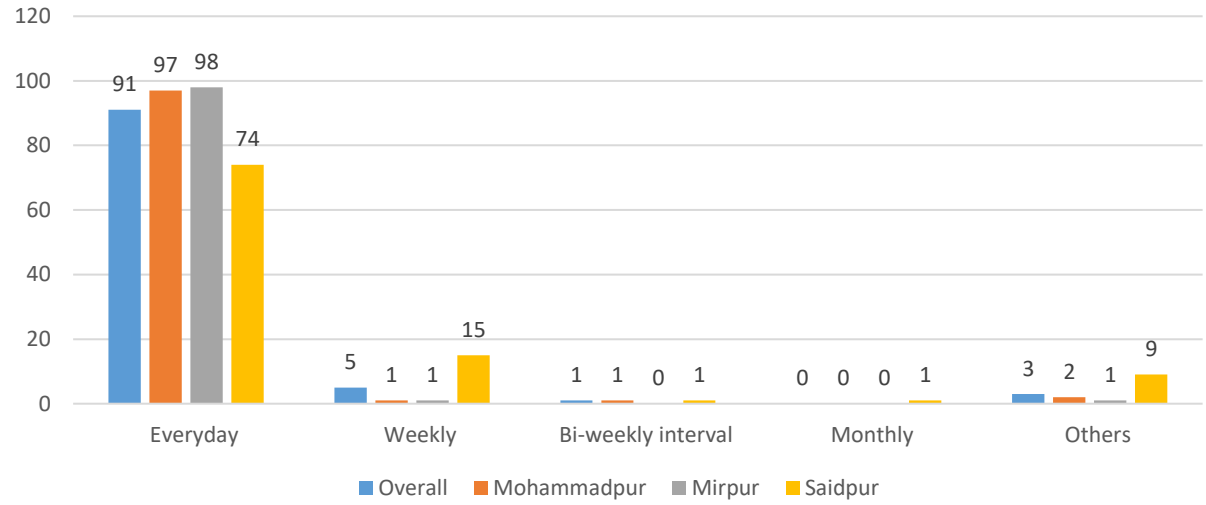


Figure 5.8: Frequency of household waste disposal

Household waste in all three study sites was managed by the respective city authorities (95%). The majority of the households in the Mohammadpur (53%) and Mirpur (65%) region had to pay for waste management; however, most of the households in the Saidpur region were not required to pay for this purpose (80%). Almost all of the households in this study had the system to manage filled-up toilets (82% and it was managed by the city corporation/ municipality (32%), community (27%), or other organizations (data not shown) (41%). The majority of the households had to pay for sewerage management (80%), and the proportion was higher in the Saidpur region (86%) (**Table 5.9**).

Table 5.9: Disposal of waste by area

	Overall	**Mohammadpur**	**Mirpur**	**Saidpur**
	N=682	**N=240**	**N=265**	**N=177**
Institution involved in managing household waste				
NGO	0.5	1.3	0.0	0.0
City corporation	95.1	94.3	96.5	94.2
Community	3.5	2.7	3.0	5.8
Others	0.8	1.8	0.4	0.0
Payment for waste management				
Yes	48.8	52.5	64.8	19.8
No	51.3	47.5	35.2	80.2
Availability of cleaning mechanism				

	Overall	Mohammadpur	Mirpur	Saidpur
	N=682	N=240	N=265	N=177
Yes	82.4	80.0	76.1	94.9
No	17.6	20.0	23.9	5.1
Organizations involved in cleaning the toilets				
NGO	0.9	2.1	0.0	0.6
City corporation	31.9	27.1	25.9	44.6
Community	26.6	31.8	26.4	20.8
Others	40.6	39.1	47.8	33.9
Payment for fecal sludge management				
Yes	80.2	82.9	73.9	85.9
No	19.8	17.1	26.1	14.1

Hand hygiene

Almost all of the participants reported that they had soap/liquid soap or detergent in their households. They washed their hands with soap/liquid soap/detergent and water after coming from the toilet. Almost every participant (99%) across the sites also reported that they washed their hands with soap/liquid soap/detergent and water after cleaning their babies' faces. More than 90% of the participants took part in this study to wash their hands before taking food and before feeding their babies. Nearly a quarter of the participants reported that they washed their hands only with water before taking food (24%), and the practice was more common in the Saidpur region (26%). Similarly, around one-fourth of the total participants (27%) and one-third of the participants from the Saidpur area (33%) stated that they used only water for washing hands before feeding their children (**Table 5.10**).

Table 5.10: Hand hygiene by area

Hand Hygiene	Overall	Mohammadpur	Mirpur	Saidpur
	N=682	N=240	N=265	N=177
Availability of soap, detergent, liquid				
Yes	99.1	97.9	100.0	99.4
No	0.9	2.1	0.0	0.6
Washing hands after coming from the toilet				
Yes	99.4	98.7	99.6	100.0
No	0.6	1.3	0.4	0.0
Materials used to wash hands				
Only with water	1.3	1.3	1.9	0.6
With soap, detergent, liquid soap and water	98.5	98.7	98.1	98.9
With ash and water	0.2	0.0	0.0	0.6
Washing hands after cleaning baby's faces				
Yes	99.1	99.2	100.0	97.7
No	0.9	0.8	0.0	2.3

Hand Hygiene	Overall	Mohammadpur	Mirpur	Saidpur
	N=682	N=240	N=265	N=177
Materials used to wash hands				
Only with water	2.2	3.0	2.6	0.6
With soap, detergent, liquid soap and water	97.3	96.6	97.0	98.8
With ash and water	0.4	0.4	0.4	0.6
Washing hands before taking breakfast, lunch and dinner				
Yes	99.6	100.0	99.6	98.9
No	0.4	0.0	0.4	1.1
Materials used to wash hands				
Only with water	24.0	24.7	22.4	25.7
With soap, detergent, liquid soap and water	74.6	73.2	76.1	74.3
Others	1.3	2.1	1.5	0.0
Washing hands before feeding babies breakfast, lunch and dinner				
Yes	93.8	94.1	94.0	93.2
No	6.2	5.9	6.0	6.8
Materials used to wash hands				
Only with water	27.4	28.9	22.1	33.3
With soap, detergent, liquid soap and water	70.9	68.4	75.9	66.7
With ash and water	0.2	0.0	0.4	0.0
Others	1.6	2.7	1.6	0.0

RESULTS: COMMUNICABLE & NON-COMMUNICABLE DISEASES

Communicable diseases

TB, COVI9-19, Dengue, Chikungunya

In this population living in Mohammadpur, Mirpur, and Saidpur areas of Bangladesh, the prevalence of such communicable diseases was found very low. Overall, 0.7% (n = 5) and 1.0% (n=7) of the respondents (household heads) reported that they had TB, and Chikungunya, respectively, in the preceding one year of the survey date. None of the participants had reported having COVID 19 or Dengue in the preceding year of the survey. Among the respondents diagnosed with TB, two were diagnosed by sputum test, one by chest x-ray, and two by a blood test. Among those who were diagnosed with Chikungunya, 4 of them were diagnosed by a blood test.

Spraying mosquito killer spray

About 54% of the respondents reported that mosquito killer was sprayed in their area. The proportion of reporting mosquito killer spray was highest in Saidpur (88%) and lowest in Mohammadpur (38%). Among those who provided positive answers about mosquito repellent spraying, 18% said that mosquito repellent was sprayed every week, 36% reported the interval was 30 days, and 45% said that the interval was one year. Of those who provided positive answers about mosquito repellent spraying, about one-fourth said the last spray was done within 30 days before the survey, last spray was within one year in 16% of the case and 59% of cases, last spray was done before one year from the survey. More details on mosquito killer spray were given in Table **6.1**.

Table 6.1: Mosquito killer spray in study sites

Traits	Overall	Mohammadpur	Mirpur	Saidpur
If Mosquito repellent sprayed in the locality				
Yes	53.9	38.3	45.5	87.6
No	46.1	61.7	54.6	12.4
Interval of spraying mosquito repellent				
1 week	18.0	9.8	42.5	3.9
30 days	36.0	25.0	38.3	40.7
1 year	45.2	65.2	16.7	55.5
Irregular	0.8	0.0	2.5	0.0
Last sprayed				
within 30 days	25.3	23.9	49.2	7.7
within 1 year	16.1	4.4	1.7	34.2
1 year or beyonds	58.6	71.7	49.2	58.1

COVID 19 related behavior

As we conducted the survey amid the COVID 19 pandemic in Bangladesh, the participants were asked some questions on COVID 19 related practices. **Table 6.2** below provided information on the availability of materials to prevent COVID 19 at the household level. Overall, 99% of the households had soap/detergent/handwash, with 65% of the households had a regular supply of soap and water in toilets; 82% of the households had a face mask, 21% had hand sanitizer/hand rubs. About 27.5% of the households had a fixed place of handwash, while 24% had soap and water in the handwashing places. About 61% of the respondents said that they regularly wash their face masks.

Table 6.2: Availability of COVID 19 related preventive materials at the households

Household with the materials (%)	Overall	Mohammadpur	Mirpur	Saidpur
Soap/detergent/hand wash	98.5	98.3	98.5	98.9
Hand sanitizer/ alcohol hand rub	21.2	19.3	22.6	21.5
Face mask	81.5	72.8	78.5	97.7
Regularly clean face mask	60.6	56.8	86.7	59.7
Gloves	7.5	8.8	4.5	10.2
Tissue paper/paper napkin	41.1	37.2	46.0	39.0
Place of handwashing	27.5	28.0	29.1	24.3
Soap and water in handwashing place	24.4	23.0	27.2	22.0
A regular supply of soap and water in the toilet	65.2	62.8	74.7	54.2

Table 6.3 below listed the COVID 19 related behavior among the women of the low-income settlements of Dhaka and Saidpur. Overall, 83% of the respondents washed their hands with soap and water. Only 3% had applied hand sanitizer or hand rubs at least four times a day in the preceding two weeks period of the interview. Among other protective behaviors, 61% had the practice of keeping shoes outside when entering rooms, 4% had worn masks, and only 1% maintained social distance at least four times in a day in the preceding last weeks before the survey date. Among the behaviors which may increase the risk of contacting COVID 19, 14% said they went outside for non-essential reasons, 4 % went for essential reason reasons, 2% used public transport, and 1% joined the social gathering at least four times a day in preceding two weeks.

Table 6.3: COVID 19 related practice at the individual level

Behaviors (≥4 times a day)	Overall	Mohammadpur	Mirpur	Saidpur
Washed hands with soap and water in last 2 weeks	83.1	78.7	80.4	93.2
Applied hand sanitizer or hand rub on hands	2.9	2.5	1.9	5.1
Consumed processed food	3.8	7.5	1.1	2.8

Behaviors (≥4 times a day)	Overall	Mohammadpur	Mirpur	Saidpur
Joined social gatherings with people other than household members	1.3	0.8	0.0	4.0
Use public transport, e.g., bus, tempo, Laguna	2.4	1.3	0.8	6.2
Went out of the house for essential reasons such as buying food or medicine	3.8	5.4	1.9	4.5
I went out of the house for non-essential reasons, such as going on a pleasure trip	13.5	19.7	14.7	3.4
Wore a face mask outside	4.1	2.1	1.9	10.2
Maintained social distance	1.5	0.8	1.1	2.8
Leave shoes outside the main entrance of the house	60.7	55.7	57.7	71.8

Non-communicable diseases

Self-reported NCDs

Bangladesh is going through an epidemiological transition with a simultaneous burden of communicable and non-communicable diseases. According to the World Health Organization - Noncommunicable Diseases (NCD) Country Profile, 2018, NCDs are estimated to account for about 67% of all deaths in Bangladesh. In this survey, information was collected on self-reported NCDs and few major NCD risk factors among the household heads living in the study area.

Table 6.4: Self-reported NCDs among mothers of <2 years old children

NCDs	Overall	Mohammadpur	Mirpur	Saidpur
Hypertension (not gestational hypertension)	40.9	41.7	26.7	48.2
Heart attack (has it ever happened?)	6.5	6.7	4.4	7.4
Any other disease of the heart	7.0	5.0	13.3	4.9
Brain stroke (has it ever happened?)	2.7	3.3	4.4	1.2
Diabetes (not gestational diabetes)	12.4	15.0	13.3	9.9
Gestational diabetes	5.4	0.0	6.7	8.6
Cancer	0.5	0.0	0.0	1.2
Long-term respiratory disease (Asthma / COPD)	9.7	6.7	11.1	11.1
Diseases of the kidneys	2.7	3.3	0.0	3.7
Mental health problems / disorders (not pregnancy or postpartum)	1.6	1.7	2.2	1.2
Pregnancy or postpartum mental problems or diseases	1.6	0.0	2.2	2.5
Eye health problem	37.6	41.7	48.9	28.4

Table 6.4 above provides the proportion of the respondents with self-reported NCDs. We asked if any health care provider ever told them that they had any of the noncommunicable diseases. Overall, 41% of the respondents had known hypertension, along 32% of the women reported they had gestational hypertension. About 12% of the respondents reported having diabetes, and 5% of the women with gestational diabetes. About 38% of the respondents reported having an eye health problem.

Behavioral risk factors of NCD

Figure 6.1 demonstrates the prevalence of major behavioral risk factors of NCD, such as tobacco use, inadequate fruits and vegetable consumption, and insufficient physical activity (IPA) among the survey participants. According to data, fruits and vegetable consumption is very low. Overall, 96% of the respondents did not meet the WHO recommendation of at least five servings of fruits and vegetable consumption which is highest in the Mirpur area (99%) and lowest in the Mohammadpur area (93%). Among the respondents, 20% were used tobacco in any form, and 8% did not meet the WHO recommendation of at least 150 minutes of moderate-intensity or 75 minutes of vigorous-intensity or equivalent physical activity in a week.

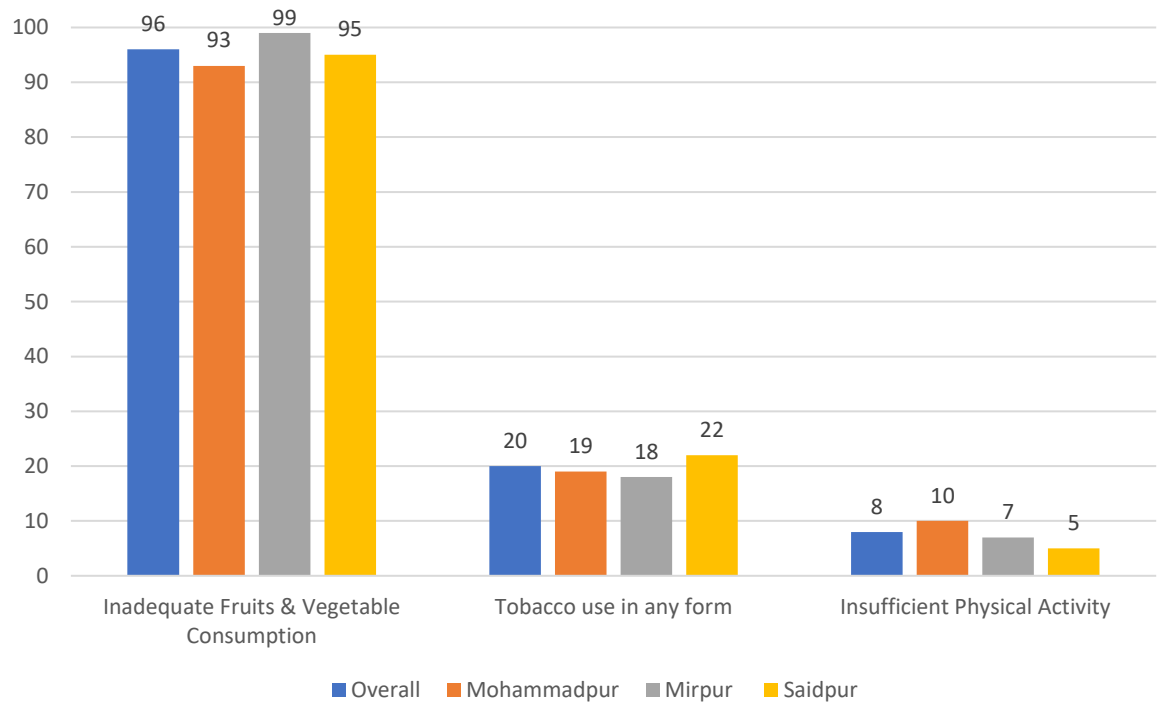


Figure 6.1: Major behavioral risk factors of NCDs among household heads

Depression and anxiety

We used Patient Health Questionnaire-9 (PHQ-9) and Generalized Anxiety Disorder-7 (GAD-7) scales to assess depression and anxiety levels among the mothers of <2 years old children in the low-income settlements of Dhaka and Saidpur area. **Figure 6.2** below shows the level of depression among the mothers of <2 years old children who participated in this survey. The overall prevalence of no or minimal, mild, moderate, moderately severe, and severe depression among those mothers were 54%, 34%, 9%, 4%, and 1%, respectively. Overall, about 46% had some kind of depression in the preceding two weeks of the survey. While the prevalence of depression was highest in the Saidpur area (49%), the lowest prevalence was estimated in the Mirpur area (43%).

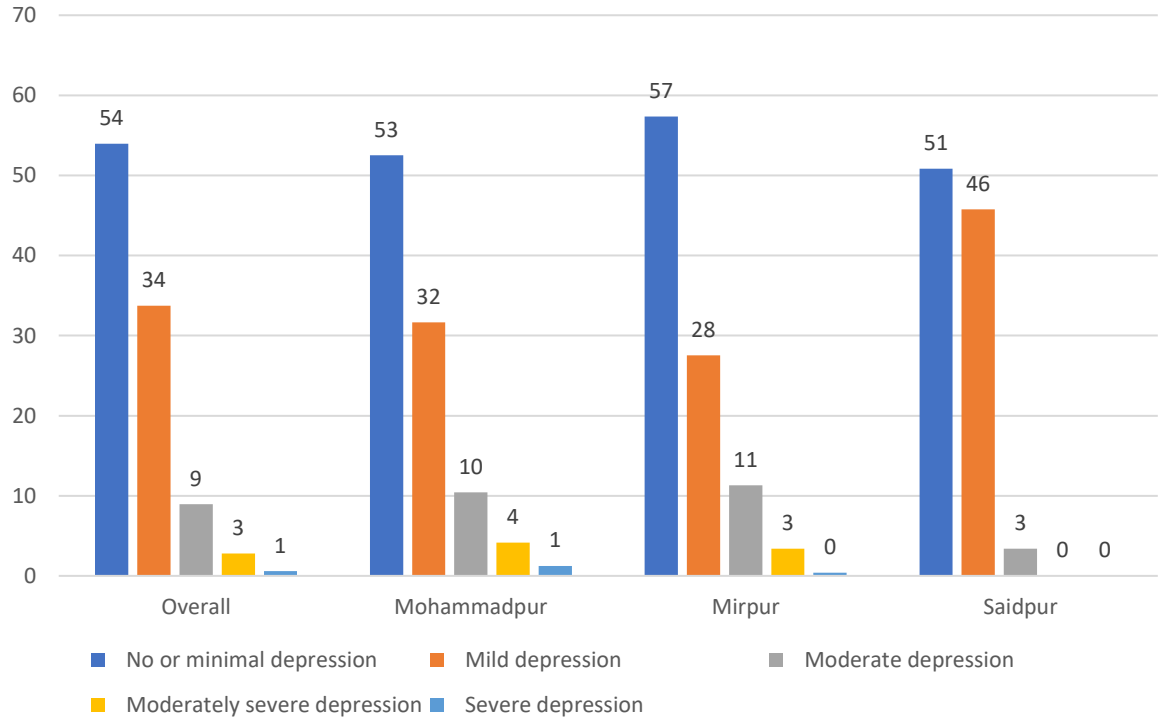


Figure 6.2: Level of depression among the mothers of <2 years old children

Figure 6.3 shows the level of anxiety among the mothers of <2 years old children who participated in the survey. According to data, overall, 44% of the mothers living in the low-income settlements of Dhaka and Saidpur areas had mild to severe anxiety levels, with the highest prevalence in Mirpur (48%) and the lowest prevalence Saidpur area (40%).

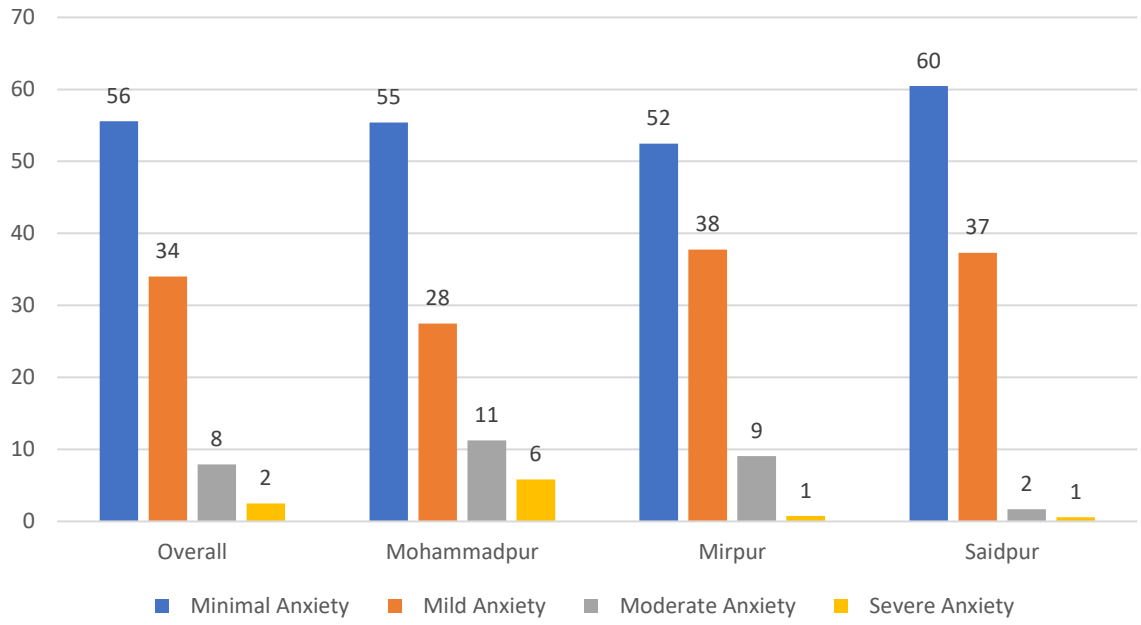


Figure 6.3: Level of anxiety among the mothers of <2 years old children

RESULTS: REFERRAL NETWORK

Among the 11 healthcare providers (HCPs), seven were female. The age range was 26 to 70 years, and the average age was 36.7 years. Seven out of 11 completed MBBS degrees and were employed in primary and secondary healthcare. The rest were either paramedics or pharmacy assistants.

Maternal and child health

Burden and perception in the community

This study explored the current maternal and child health-related issues in the study areas administering IDI with the health care providers. It was revealed that the MNCH problems vary according to the study areas (Mirpur, Mohammadpur, and Saidpur). In Mirpur, one of the most common maternal health issues was the reluctance to seek prenatal, natal, and post-natal check-ups and health care. According to the health care providers, the women usually go to the facility at the last stage of the pregnancy (third trimester). They, therefore, missed all the health care services and counseling (regular monitoring through repeated antenatal care/ANC, dietary counseling, vitamin and mineral supplements, and proper rest during the pregnancy period.). They miss the proper treatment in special situations such as gestational diabetes, hepatitis B during pregnancy, Rh-negative blood group of the mother with Rh-positive blood group of the fetus as they do not go for ANC and PNC regularly. According to the health care providers, the second most cited maternal problem was undernutrition among pregnant mothers in Mirpur. This undernutrition causes intrauterine growth retardation (IUGR) of the baby and deteriorates mothers' health. The respondents linked maternal undernutrition with a lack of dietary counseling and other supplementation-related advice and poor dietary practices during the early stages of pregnancy. It was also identified that some pregnant women were unwilling to deliver their baby in the health care facilities; instead, they usually planned for home delivery by the untrained local birth attendants, leading to post-natal complications such as postpartum hemorrhage. Furthermore, reproductive tract infection (RTI), irregular menstruation, and gynecological issues related to hygiene were common among them.

The health care providers from Mohammadpur reported that RTI, sexually transmitted infection (STI), various gynecological problems, including menstrual irregularity, were the most common maternal and reproductive health issues. In addition, maternal malnutrition, inadequate ANC, PNC visits, lack of hygiene, incomplete abortion were also mentioned as maternal health issues.

Maternal malnutrition, RTI, STI, irregular menstruation, subfertility, complications related to menstrual regulation (MR), abortion were common among the women living in the camps of Saidpur. Moreover, lack of awareness about the importance of ANC, PNC was also common among them. As a result, they

came to the hospital with various prenatal and post-natal complications such as preeclampsia, eclampsia, and breech presentation of the fetus. One health care provider from Saidpur stated:

> *"When a patient comes indoors with having no previous antenatal check-up, no ultrasound, and we diagnose a breech presentation. Anyway, then head arrest occurs, I ran out of the house immediately, the nurses could not get out the baby, then somehow, we managed. Patients with these types of extreme complication came frequently, and we have to deal with them"* (IDI-8, doctor, female, Saidpur).

Regarding child health problems, the situation in the three study sites was more or less similar and not very much different from the national scenario. The most commonly identified child health issues were diarrhea, common cold, pneumonia, and respiratory distress. They also mentioned a lack of hand hygiene and cleanliness, drinking of unsafe water, low-quality baby food, and other health issues. According to one health care provider:

> *"I have seen many diarrhea patients here in the last few months; they are all from the lowest socio-economic class, and they were not as health-conscious as they should be. Like, we must drink boiled water, but they were drinking water directly from a tap. They know it, but they do not boil water. As there are many leaks/cracks in the water tap, many microorganisms may mix with water. We are disseminating knowledge about this repeatedly, but they are not following these in real life. They have many other problems too. They are not maintaining proper hygiene, such as washing hands after using the toilet. They even usually do not wash baby's hands and sometimes do not clean the baby properly" (*IDI-6, doctor, female, Mirpur).

In Mohammadpur, the health care providers reported that children mainly got common cold, cough, fever, pneumonia, various skin infections such as scabies and other fungal infection. As stated by a physician:

> *"I will say that the children's health problems are similar to the problems in the overcrowded areas in any other parts of Bangladesh. The children get various respiratory infections like pneumonia, mild cold, cough, along with fever and skin infections"* (IDI-3, doctor, female, Mohammadpur).

Another physician from Mohammadpur also mentioned that a lack of knowledge regarding proper feeding practices of the baby and EPI schedule was common among the caregivers of the children. In Saidpur, pneumonia, diarrhea, anorexia, malnutrition, conjunctivitis, and various worm infections were common among the children. As stated by one of the respondents:

"The reason children are more prone to disease is that they live in congested and dirty environments. In the camps, the drainage system is extremely poor; if we think about sanitation, we can see that they are bathing next to the place where they drink water. They wash clothes, bathe their babies, eat, and drink in a small area. Being in such an environment is a non-stop health risk, and that is why the frequency of infection is so high in the camps" (IDI-10, doctor, male, Saidpur).

Available health facilities and services

In or around the camps of Mirpur, available facilities for maternal health care were BRAC Urban Health Centre, Marie Stopes, Nagar Matri Sadan, BAPSA Maternity Clinic, RADDA MNCH, *Surjer Hashi*, and many other private clinics and hospitals such as Quantum, Medicine clinic, etc. These health facilities provided ANC, PNC, normal vaginal delivery (NVD), cesarean section, MR, abortion, and other health services for various gynecological problems. Whenever needed, they also referred the patients to a higher level of health facility for better management. They also provided Papanicolaou (PAP) smear test and vaccine to prevent human papillomavirus (HPV) infections. Some of these facilities also provided home delivery with skilled birth attendants (SBA). After delivery, they also provided advice regarding exclusive breastfeeding up to 6 months, assisted mothers to breastfeed their children properly, family planning, and immunize children as per expanded program on Immunization (EPI) schedules.

In Mohammadpur, the available facilities for maternal health services were Suhrawardy Medical College and Hospital, Mohammadpur Fertility Centre, *Nagar Shastho Kendro and Matri Sadan, Surjer Hashi* clinic, and other private clinics and hospitals such as DSK hospital, Dhaka Central International Hospital, Bangladesh Specialized Hospital. These facilities provided family planning services with counseling, ANC, PNC with advice, MR, abortion, STDs, and services for other gynecological problems. They also provided support to adolescent girls regarding dysmenorrhoea and other health problems related to puberty.

In Saidpur, 100-bedded government hospitals, Thana Health Complex, MCWC, *Surjer Hashi,* and other maternal and child clinics provided services for maternal health. They provided routine ANC, PNC, NVD, dietary counseling to prevent malnutrition among pregnant mothers and treat subfertility, RTI, STI. They also refer the patients to the next level of health facilities when required for advanced treatment.

There were no health facilities for child health near the Mirpur camp area. The closest facility was RADDA MNCH, which was situated at an area named Mirpur 10. The facility provided EPI services

to the children and food supplements for malnourished children. Mirpur General Hospital and BAPSA Maternity clinic provided treatment for the common cold, fever, diarrhea, pneumonia, respiratory distress, and supportive treatment for other diseases of the children. If needed, they referred the children mainly to the Dr. MR Khan *Shishu* Hospital and Institute for Child Health situated at an area named Mirpur 2. Sometimes the inhabitants of the camp received treatment from other private hospitals such as Delta Medical College & Hospital at Mirpur 1.

Children of Mohammadpur camp area got treatment from the Dhaka *Shishu* Hospital, Suhrawardy Medical College and Hospital, Mohammadpur Fertility Services and Training Centre, *Nagar Shastho Kendro*, *Surjer Hashi*, and other private clinics. These facilities provided EPI, advised the mothers for exclusive breastfeeding and other care of the baby, and provided treatment of other specific health problems such as fever, common cold, diarrhea, respiratory distress, pneumonia, and other diseases.

However, there were no health facilities specific for child health problems except Dhaka *Shishu* Hospital. There were MCWC and Thana Health Complex that provided services for the children living in the Saidpur camps. These facilities provided the treatment of diarrhea, fever, common cold, cough, conjunctivitis primarily. If required, they referred the children to a higher health facility.

The need for facilities and services

According to the health care providers, the biggest challenge was the reluctance to seek health care for maternal and other gynecological problems among women across the study areas. However, the respondents opined that health-seeking behavior improved over time. In Mirpur, there was overcrowding in the camp area, and the existing facilities could not fulfill the demand for maternal services. The respondents said that the door-to-door visit in the camp area should be increased, and there is a need to increase knowledge and awareness among them, including the household heads, who will ultimately decide to seek health care. Besides, there should be improved maternal health services.

> *"We have to increase the number of health care workers and we need to go door-to-door so that everyone can know everything. There is a lack of money for which they are afraid to go to higher health facilities. Arrangements need to be made in such a way that the women living in the camps can get better services at low cost" (*IDI-5, paramedic, female, Mirpur).

In Mohammadpur, health care providers opined that existing health facilities met the demand of maternal health services, but the main obstacle was the lack of awareness of the community people to seek health care.

"We have our package (of interventions) from the very beginning of the pregnancy. They do not even have to come here. We have satellite paramedics, satellite field staff, FWA, FWV. They want to go home and provide services, but I would say the main barrier is their lack of awareness. They do not accept us. They say why we need to do a check-up when there is no problem and come to the first ANC in 6 months of pregnancy. They are lucky that they have much choice here and everywhere; they get the services at a relatively low price, but they will not take them. There is too much disinterest among them" (IDI-3, doctor, Mohammadpur).

In Saidpur, the existing facilities were trying to fulfill the demand for maternal health services, but one of the challenges was the lack of awareness regarding health care. Another barrier was the low socio-economic condition.

"I think counseling is critical, and I do not think there is any NGO in Saidpur that works at the root level or provides low-cost services for the people of camps. There are many poor patients, and they suffer a lot. There is no such field-level health workers who go door-to-door" (IDI-8, doctor, female, Saidpur).

As mentioned earlier, there is no facility near the Mirpur camp that solely provides services for child health. The maternal health facilities provide some services for the child health problem. Therefore, the existing facilities could not meet the demand for child health services in this area. The health care providers recommended that it is necessary to educate the parents of the children regarding exclusive breastfeeding up to 6 months, the practice of personal hygiene, and sanitation by all the family members through door-to-door visits by the community health workers. They also emphasized preventive measures as many of the child health issues in such a community could be prevented through relevant precautionary measures. In addition, it would be better if there were child health facilities near the camps.

"I see most of the service centers around us are mother-oriented. So, I think they need a little bit of child-oriented health facility and services so that the children will get better treatment" (IDI-6, doctor, female, Mirpur).

In Mohammadpur, the existing facilities could not meet the demand for child health services when they needed ICU support. There were only 10 ICU beds in Dhaka *Shishu* Hospital, and in Suhrawardy Medical College Hospital, there was no ICU support for the child. Hence it is crucial to increase equipment and services of the existing facilities too. On the other hand, awareness should be increased among those communities for seeking health care for their children and take proper care of the children.

Mohammadpur fertility center respondents informed that they would start Special Care Newborn Unit (SCANU) in their center soon to improve the newborn services.

There was no child-specific health facility near the camps of Saidpur, and thus, the existing facility could not meet the demand for child health care. It would be better if they have a child-specific health center. On the other hand, awareness among parents for their baby's health should be increased because most of the health problems of the children are preventable.

> *"There are many families without enough money, and they (family members) cannot go to the specialized doctor. So if a center was opened for the children in our ward (ward 5), and if there is a doctor for 8 hours, many children from low-income families of these camps could be benefited"* (IDI-11, medicine seller, male, Saidpur).

Existing referral system

In this study, we tried to identify the health facilities where patients are being referred for maternal and child health-related complications. Information on the "referral system" was solicited from IDI participants from the health facility in and around the study areas. Specifically, health care providers were asked to indicate the services for which patients were typically referred elsewhere for each of these services and the name of the facility where patients were typically referred. It is important to note that the reported referral facilities were not based on actual patient-specific referral events nor verified with the receiving facility. Therefore, in this whole report, the referral facilities mean 'reported referral facilities.' Due to the time and resource constraint, we mainly focused only on the facilities they referred to rather than focusing on the referral system as a whole.

The following tables illustrate the existing referral facilities for maternal (**Table 7.1**) and child (**Table 7.2**) health across the three study sites according to the health care providers interviewed. In addition, findings from the quantitative component, where the community people reported the referral facilities, also described a similar scenario about referral facilities for maternal and child health issues in the camps covered in this study.

Table 7.1: Existing primary health care and referral facilities for maternal health across the three study sites

Study sites	Primary health care facility they seek maternal services	Referred to the following facilities
Mohammadpur	1. Mohammadpur fertility and training center 2. Suhrawardy medical college & hospital 3. S*urjer Hashi* clinic 4. *Nagar Shastho Kendro and Matri Sadan*	1. Suhrawardy Medical College and Hospital 2. Dhaka Medical College and Hospital
Mirpur	1. BRAC Urban Health Care 2. Marie Stopes Clinic 3. *Nagar Matri Sadan* 4. BAPSA Maternity Clinic 5. Mirpur General Hospital 6. Other private clinics	1. Suhrawardy Medical College and Hospital 2. Dhaka Medical College & Hospital 3. BRAC Urban health care
Saidpur	1. Mohammadpur fertility & training center 2. Suhrawardy medical college & hospital 3. S*urjer Hashi* clinic 4. *Nagar Shastho Kendro*	1. Suhrawardy Medical College and Hospital 2. Dhaka Medical College and Hospital

Table 7.2: Existing primary health care and referral facilities for child health across the three study sites

Study sites	Primary health care facility they seek maternal services	Referred to the following facilities
Mohammadpur	1. Mohammadpur Fertility and Training Center 2. Suhrawardy Medical College and Hospital 3.Dhaka *Shishu* Hospital 4. *Nagar Shastho Kendro* 5. Local pharmacy/drug shops	1. Dhaka *Shishu* Hospital 2. Suhrawardy Medical College and Hospital 3. Dhaka Medical College & Hospital
Mirpur	1. RADDA MNCH-FP Center 2. Dr. MR Khan *Shishu* Hospital and Institute of Child Health 3. Delta Medical College and Hospital 4. Local pharmacy/drug shops	1. Dr. MR Khan Shishu hospital & Institute of Child Health 2. Dhaka *Shishu* Hospital
Saidpur	1. Thana Health Complex 2. MCWC 3. *Shurjer Hashi* clinic 4. Local pharmacy/drug shops	1. Private chamber of pediatricians 2. Rangpur Medical College & Hospital

Tuberculosis, dengue, COVID-19, and other communicable diseases

Burden and perception in the community

According to the health care providers, the camps of Mirpur had many tuberculosis cases. They said people live there in a congested and overcrowded environment, leading to many TB patients. They reported that the number of dengue cases was comparatively low this year compared to the last two years. However, Mirpur camp dwellers faced the most severe dengue outbreak in 2019, when many children and adolescents died from this disease. All three respondents from Mirpur reported that there were not many COVID-19 patients from these communities. The inhabitants of these camps did not even consider COVID-19 as a disease, and they did not maintain any COVID-19 precautions and preventive measures. One respondent opined that there could be many undiagnosed COVID-19 patients in these communities as they did not comply with doctor's recommendations for COVID-19 tests.

> *"They do not even consider COVID-19 as a matter of concern. I posted a notice outside which says, 'do not enter without wearing your mask'. But, they come here without a mask and tell me that Corona is nothing, you are just blabbering about this"* (IDI-6, doctor, female, Mirpur).

> *"We are advising these patients that you may have been suffering from COVID-19; you have to wear a mask and keep a distance from other members of your household. However, they get offended that we are saying these things and considering them as COVID-19 patients*" (IDI-7, doctor, female, Mirpur).

Other than these diseases, fungal skin infections were quite common among the population of camps in Mirpur.

One respondent from Mohammadpur stated that many people of this camp community were suffering from Tuberculosis and dengue. However, two doctors who work in this area said they did not get many dengue patients this year. One of them mentioned their awareness campaign and free diagnostic tests and treatment options for dengue. She also added that she did not receive much response from this community despite these initiatives. She stated that people of this community might not recognize dengue fever because of their lack of knowledge. On the other hand, a doctor from Mohammadpur said she dealt with many dengue patients last year. Only DSK from the Mohammadpur region provides treatments for the COVID-19 patients. The other three respondents from Mohammadpur said that their facilities did not deal with the COVID-19 patient. Instead, they referred them to the COVID-19 designated facilities. If they found someone with COVID-19 symptoms, they referred them to Shaheed Suhrawardy Medical College and Hospital. These health centers rarely got TB patients because there is a specialized hospital for TB (National Institute of Diseases of the Chest and Hospital/NIDCH) near

Mohammadpur. The doctor who works at *Nagar Shastho Kendro* thought that patients of this community tended to hide their TB symptoms, and they had a non-accepting tendency towards TB investigations and treatments.

> *"But patients of this area are different. They act in a way that TB is a sin. They will not admit it, even if they have it. When a patient suffers from a cough for more than three weeks, and we suggest doing a TB test, they do not comply easily. They say I do not have TB; this is just a normal cough*" (IDI-3, doctor, female, Mohammadpur).

According to a healthcare provider, tuberculosis patients were rarely found in the camp community in Saidpur. A respondent from Saidpur reported that though TB was not quite common in this area, the burden of filariasis in Saidpur was comparatively higher than in other regions. They found dengue patients rarely because the Aedes mosquito was not common in Saidpur. Therefore, the respondents had to deal with very few patients suffering from COVID-19 or dengue, and usually, they refer these patients to higher centers. Despite living in a congested environment, there were not many COVID-19 cases in Saidpur, but the respondent also mentioned that very few people visited health centers for COVID-19 tests in Saidpur.

Available health facilities and services

Patients of Mirpur camps generally received services from SAVE One Hospital and Marie Stopes Clinic, and there was no COVID-19 designated hospital near this camp. Mirpur General Hospital near Mirpur Millat Camp had adequate facilities for TB and dengue patients. They provided complete diagnostic and treatment services to these patients, but they did not admit COVID-19 patients; instead, they referred them to COVID-19 dedicated hospitals like Kurmitola General Hospital and Shaheed Suhrawardy Medical College and Hospital. There were other health centers for infectious diseases available near this camp. ICDDR,B at Mirpur 11, provided services to TB patients, Aalok Health Care and Hospital offered services to COVID-19 patients, and treatment for dengue fever was available in all nearby hospitals.

A respondent from the BAPSA Model Reproductive Health Clinic said they provided healthcare to COVID-19 patients in their outpatient department. Dengue patients could get primary treatment from this hospital, too, though the health center referred complicated dengue cases to higher centers. They referred suspected or diagnosed TB patients to the Salvation Army Hospital or *Surjer Hashi* Clinic. Sometimes they referred patients with cervical lymphadenopathy to Kurmitola General Hospital, and often their problems were diagnosed as TB. Several organizations were working in this region for TB management, including the Salvation Army, Radda MCH-FP Centre, World Vision, and *Surjer Hashi*

Clinic. There was no designated health center for dengue, but all hospitals of this locality provided services for dengue fever according to their capacity. She also reported that BRAC was doing impressive works regarding the COVID-19 pandemic, including patient identification, informing the authority, and sample collection for COVID-19 tests. She said that if any patients agreed to give a sample, they contacted BRAC, and then BRAC collected their samples from their home addresses. She mentioned that she referred some patients from her center to Kurmitola General Hospital for COVID-19 treatment and all of them received good care. She thought available services for dengue were adequate too.

All four respondents from Mohammadpur said they referred TB patients to the National Institute of Diseases of the Chest and Hospital (NIDCH) and COVID-19 patients to Shaheed Suhrawardy Medical College and Hospital. They had free-of-cost diagnostic facilities for dengue, and they arranged awareness campaigns but did not get many patients this year. There is another center named *Nagar Shastho Kendro* at Bashbari, Mohammadpur, for TB patients. Unlike the other three health centers, *Dushtha Shasthya Kendra* (DSK) near Mohammadpur Johuri Moholla Camp had facilities to treat different communicable diseases. They provided treatment for mild COVID-19 cases in the hospital outdoors and admitted moderate and severe COVID-19 cases in this hospital. They also started an initiative of home delivery of oxygen cylinders at minimum cost. They have a central oxygen supply to manage these patients. They also provided treatment for TB and dengue. A respondent of this center said that people could get treatment for COVID-19 from Shaheed Suhrawardy Medical College and Hospital, which was declared as a COVID-19 dedicated hospital. Moreover, other health centers of this region had COVID-19 units. She thought health centers of this area were adequate for managing COVID-19, tuberculosis, and dengue patients.

In Saidpur, there was a 100-bed hospital where treatments for communicable diseases were available. Moreover, there was a filaria hospital and a TB hospital in Saidpur. Our respondents said if they found any patients with these infectious diseases, they referred them to these centers, and if they suspected anyone with COVID-19, they referred them to higher centers such as 100-bedded Hospital in Saidpur and Rangpur Medical College Hospital.

Need for facilities and services

In Mirpur, respondents said that they needed a specialized hospital for tuberculosis. A healthcare provider from Mirpur added that there should be a COVID-19 hospital near this camp. However, all of them expressed the need to raise awareness about preventive measures for communicable diseases like removing stored water, cleanliness of the environment, using a mosquito net to prevent dengue fever, hand-washing practice, and wearing a mask to prevent the COVID-19. They also suggested educating

people about disease transmission processes of communicable diseases like tuberculosis, and people should know how and where they should seek health care for these diseases. The BAPSA Model Reproductive Health Clinic respondent said that there were many HIV-positive sex workers in the Mirpur region, and we should educate adolescents about STDs.

Though respondents from the Mohammadpur reported that there were adequate facilities for communicable diseases in this region, the main barrier to seek care was the lack of awareness among the population of these camps. Also, they had many misconceptions about these diseases and visited health facilities only when the disease condition worsened and got complicated. Respondents also mentioned the necessity of regular awareness campaigns to educate people about communicable diseases like TB, dengue, and the COVID-19. The medical officer of *Dushtha Shasthya Kendra* suggested educating people about protective measures of COVID-19, like keeping a safe distance from others and wearing masks. She added that TB patients should be encouraged to quit smoking. She thought we should put more emphasis on mosquito eradication to prevent dengue outbreaks.

A senior medical officer from Saidpur talked about the seasonal outbreak of diarrhea in Saidpur, and he opined that the health facilities of Saidpur did not have sufficient capacity to tackle these situations. Patients were referred to Rangpur, and a few people even died from this illness. He suggested increasing the capacity of health centers of Saidpur so that they could manage these outbreaks. Moreover, he suggested awareness programs to inform people about maintaining hygiene and drinking boiled water. He also mentioned that it is essential to improve the sanitation system of Saidpur. A pharmacy assistant of Munshipara Railway Colony Camp said that they needed a health center inside their community to get health services from the doctors. He added that people of this community could not afford to buy medicine, and they needed free-of-cost medicines; otherwise, only a doctor's prescription would not solve their problems.

Existing referral system

In this study, we explored the health facilities where patients were being referred for TB, dengue, COVID-19, and other communicable diseases related complications in the community (**Table 7.3**). Patients of Mirpur area were usually referred to TB Hospital or National Institute of Chest Disease & Hospital (NIDCH) or ICDDR,B or The Salvation Army, Mirpur, or *Surjer Hashi* Clinic for TB. The COVID-19 patients were referred to Kurmitola General Hospital or other COVID-19 dedicated health facilities.

Table 7.3: Existing referral facilities for tuberculosis, dengue, COVID-19, and other communicable diseases

Diseases	Referred to the following facilities		
	Mohammadpur	**Mirpur**	**Saidpur**
Tuberculosis (TB)	1. National Institute of Diseases of the Chest and Hospital (NIDCH) 2. Mohammadpur TB hospital 3. Central Hospital	1. National Institute of Diseases of the Chest and Hospital (NIDCH) 2. icddr,b 3. The Salvation Army, Mirpur 4. *Surjer Hashi* Clinic	1. LAMB hospital
Dengue	1. Shaheed Suhrawardy Medical College and Hospital 2. *Dushtha Shasthya Kendra* 3. Central Hospital	1.Kurmitola General Hospital 2. Shaheed Suhrawardy Medical College and Hospital 3. Mirpur General Hospital	1. 100-bedded Government Hospital
COVID-19	1. Shaheed Suhrawardy Medical College and Hospital 2. *Dushtha Shasthya Kendra* 3. Central Hospital 4. Bangladesh Specialised Hospital	1. Kurmitola General Hospital 2. Other COVID-19 dedicated health facilities	1. 100 Bedded Government Hospital 2. Hospitals in Rangpur City
Other communicable diseases	1. Shaheed Suhrawardy Medical College and Hospital	1. Kurmitola General Hospital 2. Shaheed Suhrawardy Medical College and Hospital	1. 100 Bedded Government Hospital 2. Hospitals in Rangpur City

Health centers adjacent to Mohammadpur camps referred TB patients to Mohammadpur TB hospital and dengue and the COVID-19 patients to Shaheed Suhrawardy Medical College and Hospital. *Dushtha Shasthya Kendra* had facilities to manage these patients. However, if anybody wanted a better hospital environment, in that case, they referred them to Central Hospital or Shaheed Suhrawardy Medical College and Hospital. If any COVID-19 patients required an ICU facility, they referred them to Shaheed Suhrawardy Medical College and Hospital or Bangladesh Specialised Hospital. Patients of Saidpur were usually referred to LAMB hospital for TB, and COVID-19 patients were referred to 100-bedded Hospital, Saidpur, or hospitals in Rangpur City.

Eyecare

Burden and perception in the community

The respondent who worked near the Mirpur Millat camp area mentioned cataracts as a common eye problem among the elderly population of this community. According to the respondents from Mohammadpur camp areas, conjunctivitis and other inflammatory conditions were common among infants and young children, whereas elderly patients mainly suffered from cataracts.

Eye problems like cataracts, conjunctivitis, and refraction error were most commonly reported in Saidpur. A senior medical officer of Marium Eye Hospital, Saidpur, discussed the eye health issues of this study site elaborately. Patients who visited this center mostly had conjunctivitis, keratitis, allergic problems, and refractive errors and got treatment in the outpatient department of this hospital. He particularly mentioned cataracts as a significant eye problem. He reported that Saidpur and its nearby areas had a large number of cataract patients. He related this problem to their low socioeconomic condition and poor nutritional status. Most of the cataract patients of Saidpur were from the slums community. They could not afford cataract surgery because of their financial crisis. Another respondent who worked as a pharmacy assistant said children of this community suffered from eye problems because of their excessive mobile phone use for gaming. They suffered from headaches and refractive errors.

Available health facilities and services

Regarding available health facilities and services for eye health, respondents from Mirpur said that they only provided services for minor eye problems within the nearby areas of the camps. They usually referred patients to OSB Eye Hospital, Bangladesh Eye Hospital, and Lions Eye Institute and Hospital. Some patients took services from free medical camps for eye diseases, and many ophthalmologists provided services in their private practices.

An ophthalmology assistant from Mohammadpur Geneva camp said they provided primary management of eye diseases. If required, they referred patients to the National Institute of Ophthalmology and Hospital. Mohammadpur Fertility Center arranged a monthly medical camp for eye patients in collaboration with Drishti Eye Hospital and treated conjunctivitis, allergic problems, cataracts, and other common eye diseases. *Nagar Shastho Kendro* also arranged this type of medical camp in collaboration with Drishti Eye Hospital. There was another hospital named Dhaka Eye Care Hospital which also provided eye treatments in this area. Moreover, the National Institute of Ophthalmology and Hospital and Shaheed Suhrawardy Medical College and Hospital were not far from this area. The doctors of *Nagar Shastho Kendro* and *Dustho Shasthya Kendra* thought these facilities were sufficient for eye care.

A medicine salesman from Saidpur Golahaat Camp reported that there was no health service available for eye diseases in this area. He treated patients with vitamins and anti-bacterial eye drops and referred them to the private doctors' chambers if needed. Another respondent from a diagnostic center said that they only provided treatment for minor problems like conjunctivitis. They referred congenital dacryocystitis or chronic dacryocystitis patients to the higher centers. One respondent from Marium Eye Hospital said that they arranged a program every year where poor patients could get their cataract surgery free of cost. This hospital had an outdoor service for the primary management of eye diseases. They also provided surgical management of eye diseases like cataracts, dacryocystitis, and pterygium. However, they did not have diagnostic facilities for glaucoma patients. Therefore, patients with glaucoma, uveitis, and retinal diseases were referred to higher centers for their treatment. There was another hospital in Saidpur named Saidpur Community Eye Hospital that also provided eye care. However, it provided services only two days a week.

> *"They cannot afford (eye) surgery only because of their financial problems. From our side, we provide some free treatment every year for the people of the Bihari community only. As they cannot get their surgery because of financial problems, we perform 100 surgeries once a year with our funds or by managing a donor"* (IDI-10, doctor, male, Saidpur).

A pharmacy assistant from Munshipara Railway Colony Camp said people of this camp received services from free medical camps for eye diseases. Moreover, there were some specialists' chambers and the Marium Eye Hospital for eye care.

Need for facilities and services

A respondent from Mirpur camp suggested educating people about the importance of eating small fish and vegetables for eye health. She added that a hospital for eye diseases should be established near this camp, and then people of this community will be able to access services more efficiently. Though respondents from Mohammadpur thought nearby government hospitals could provide adequate eye care for the area's population, they suggested raising awareness about children's eye care and early detection of diabetes for adults to prevent ophthalmic complications related to diabetes. A medical officer from Saidpur suggested the establishment of another eye hospital in Saidpur. The respondent from Marium hospital reported that as they offer free cataract surgeries, poor cataract patients of the Saidpur community were getting this service to some extent. However, they had no funds for free surgeries for other eye diseases like dacryocystitis and pterygium, and many people could not afford these treatments. He also suggested raising awareness about personal hygiene to prevent conjunctivitis and control diabetes and hypertension from preventing eye-related complications. A pharmacy assistant from

Munshipara Railway Colony Camp opined that private hospitals and doctors' chambers could not fulfill eye care demands for these communities. Though Marium Eye Hospital of Saidpur provided low-cost consultation for poor people, many of them could not afford expensive medicines for their treatment.

> *"Suppose you have consulted a doctor with a 50/100-taka ticket at the Marium Hospital. They have prescribed you medicines which cost of 1200 taka or 800 taka. Those who do not have enough money, what are they going to do? They buy only eye drops and try to manage their problem with it. If they get cured, then it is good; if not, there is nothing to do*" (IDI-11, medicine salesman, male, Saidpur).

Existing referral system of eye care

We explored the health facilities where patients were referred to for any eye-related health complications across the three study sites (**Table 7.4**). Mirpur respondents usually referred patients to OSB Eye Hospital, Bangladesh Eye Hospital, and Lions Eye Institute and Hospital. On the other hand, patients of the Mohammadpur region were usually referred to the National Institute of Ophthalmology and Hospital and Shaheed Suhrawardy Medical College and Hospital.

Eye patients of Saidpur usually got their treatments from specialist doctors' chambers and Marium Eye Hospital. If other health facilities found any patient with eye disease, they also refered them to those specialists or Marium Eye Hospital. On the other hand, Marium Eye Hospital referred some patients to Deep Eye Care Foundation, Rangpur, for diagnostic purposes. Rangpur did not have adequate facilities for the treatment of retinal diseases. Consequently, patients with these diseases were directly referred to Ispahani Islamia Eye Institute and Hospital, Farmgate, Dhaka, from Marium Hospital.

Table 7.4: Existing primary and referral facilities for eye health care across the three study sites

Study sites	Primary care facility for eye health care	Referred to the following facilities
Mohammadpur	1. Private chambers of ophthalmologists 2. Mohammadpur Fertility arrange monthly medical camps for eye patients in collaboration with Drishti Eye Hospital 3. Dhaka Eye Care Hospital 4. Medical camp for eye patients *by Nagar Shastho Kendro* in collaboration with Drishti Eye Hospital 5. *Dustho Shasthya Kendra*	1. National Institute of Ophthalmology and Hospital 2. Shaheed Suhrawardy Medical College and Hospital

Study sites	Primary care facility for eye health care	Referred to the following facilities
Mirpur	1. Free medical camps for eye diseases 2. Private chamber of ophthalmologists	1. OSB Eye Hospital 2. Bangladesh Eye Hospital 3. Lions Eye Institute & Hospital
Saidpur	1. Eye specialist doctors chambers (private) 2. Marium Eye Hospital 3. Saidpur Community Eye Hospital (only two days n a week)	1. Deep Eye Care Foundation, Rangpur 2.Ispahani Islamia Eye Institute & Hospital, Farmgate, Dhaka

Mental health issues

Burden and perception in the community

A senior medical officer of a private hospital near Mirpur Millat Camp said that usually, they did not get many patients with mental health issues. If someone visited their center for these services, they referred them directly to the National Mental Health Institute and Hospital. A doctor working in a clinic of Mirpur Rahmat Camp reported that many women in this community were suffering from mental health problems like depression and anxiety. She shared an interesting finding that in the last 3-4 months, she got some patients who thought they were suffering from some diseases. However, the doctor found that they were completely healthy, and their laboratory reports were normal. She thought that maybe the COVID-19 pandemic-related deaths and news somehow affected them, and she referred them to the National Mental Health Institute and Hospital. Another respondent from Mirpur said that substance abuse (heroin, cannabis) was widespread among the young population of Mirpur camps, particularly in the Muslim camp.

In Mohammadpur, the doctor of *Nagar Shastho Kendro* thought people of these communities required mental health services, and many of them did not even realize that they need for mental health care because of the lack of knowledge and awareness about the mental health problems. Women often suffered from antepartum and postpartum depression, and she identified early marriage and male-dominated culture as underlying causes behind these problems.

> *"Most commonly, 15-16 years aged pregnant girls come here for ANC services. I think their mental health status is terrible"* (IDI-3, doctor, female, Mohammadpur).

A doctor from Saidpur said that she received only 1-2 female patients every week who visited the health center for mental health problems like anxiety disorders and depression. They only dealt with minor issues; patients suffering from major mental health illnesses were referred to specialist doctors. According to her, Saidpur needs health facilities for mental health patients as many poor patients were

not getting services as they could not afford a consultation with specialist doctors, and they could not buy medications because major mental illnesses require long-term treatment. Another respondent who worked as a medicine salesman in Saidpur Golahaat Camp reported that he did not get many patients suffering from mental illnesses. If he suspected anyone with these types of problems, he refers them to the psychiatrists. A doctor from Marium Eye Hospital, Saidpur, opined that people of Saidpur felt mental pressure as they were sometimes discriminated against based on their identities (as *Biharis*). Many patients from this community are always tense about their financial crisis and were suffering from depressive illnesses.

> "*Particularly, if I think about Saidpur, people here are under huge mental pressure. Why are they under mental pressure? Because here they are considered as two different races, I am Bihari, and I am Bangali"* (IDI-10, doctor, male, Saidpur).

According to the respondent from Munshipara Railway Colony Camp, many adolescent boys suffered from mental illnesses in this community, and he related these problems to substance abuse.

Available health facilities and services

Health care providers of various NGOs visited Mirpur Muslim Camp, and they provided counseling and referred the mental health patients to a hospital if any treatment is required. Emergency medical officers of the BAPSA Model Reproductive Health Clinic tried to determine the cause of mental health problems; they provided counseling and medications to these patients. If a patient did not recover after treatment, they referred that patient for a specialist's consultation. There is a small clinic near this camp that also provided mental health services.

Nagar Shastho Kendro and *Dushtha Shasthya Kendra* of Mohammadpur provided services for mental health problems with their limited capacities. The other two centers of Mohammadpur did not have these facilities as one of these centers mainly provided eye care, and the other was a fertility care center. The doctor of *Nagar Shastho Kendro* said they worked with a program named 'Violence Against Women.' They provided services, including mental health support and counseling for the victims of domestic violence. If needed, these women were referred to *Paribarik Nirjaton Protirodh Kendro (center for preventing domestic violence)*. Very few patients visited *Dushtha Shasthya Kendra* at Mohammadpur for mental health services. They provided counseling and, if necessary, then prescribed anti-psychotic drugs to those outdoor patients. None of these hospitals had indoor treatment facilities for mental health patients.

A doctor from Saidpur said she commonly dealt with anxiety and depressive illnesses. In case of severe mental illnesses, he referred patients. There was no available service for mental health patients in the health centers of this community, even the 100-bedded government hospital had no psychiatrist, and poor patients could not access mental health services because of the financial problems. People must go to Rangpur city (a city 43 km away from Saidpur) if they wanted mental health care. There was no service available for mental health problems in the Saidpur Golahaat Camp area.

Another respondent from Saidpur reported that some patients with mental illnesses visited their center, and he thought domestic troubles were the main reasons behind their illnesses. He provided treatment for these patients, and if he observed no improvement, he referred them to a specialist doctor's chamber in Saidpur for further evaluation. However, in Saidpur, there was no designated healthcare facility for mental illnesses. According to our respondent from Munshipara Railway Colony Camp, there was no psychiatrist in Saidpur, and two doctors came every week from Rangpur for their private practice. They were the only options of mental health services for the people of Saidpur. Thus, the people of Saidpur were not getting adequate care for their mental health illnesses. Those who could afford to travel to Dhaka or Rangpur for these services could get the services, but it was impossible for every one of their community.

> *"Those who have the financial ability take treatments from Dhaka or Rangpur. Those who do not have enough money, they consult with local doctors. They prescribe medicine, and patients are taking those for years. If their condition improves, then it is good. Otherwise, they continue to suffer"* (IDI-11, medicine salesman, male, Saidpur).

Need for facilities and services

As Mirpur is a densely populated area, it needs more health care facilities where mental health services will be available, according to one of the respondents from Mirpur. The BAPSA Model Reproductive Health Clinic respondent suggested that we should raise awareness about mental health problems, inform people about available facilities and services. According to her, we should establish relevant facilities such as hospitals and institutes for optimum utilization only after making people aware of mental health issues. She added that people could not even identify mental health problems, and without knowledge and awareness, they will not seek mental health services, and large institutes will remain empty as people will not go there for services.

> *"I am becoming angry in every situation and acting up with my children; people do not recognize this as a mental health issue. I think I have some disease and frequently going for a check-up, this is also a mental health problem, and there is no awareness about this too. If I*

refer them to a psychiatrist, they say that they are not insane; why should they consult with a doctor who deals with insane people" (IDI-7, doctor, female, Mirpur).

A doctor from Saidpur suggested that the government should create a psychiatrist's post in the local government hospital. But, she thought, unlike other health issues, mental health problems were neglected.

"In our health sector, maternal health and child health facilities have improved a lot, but facilities for cardiology and psychiatry are not increasing. These facilities should be available at the Upazila level" (IDI-8, doctor, female, Saidpur).

Respondent of Golahaat Camp said they do not have any mental health services in their area. A doctor from Saidpur said people of Saidpur did not know much about mental health issues and could not even realize that they had these problems. When they visited any doctor or medicine specialist, they referred them to a psychiatrist if needed. He reported that many mental health patients were not diagnosed and were suffering without knowing they had a disease. He thought mental health issues should be discussed more to raise awareness, and more emphasis should be given to counselling services. He suggested that BRAC and other NGOs should arrange some programs and help people with mental health issues.

Existing referral system

We explored the health facilities where patients were being referred in case of any mental health-related complications in the community (**Table 7.5**). According to the respondents of Mirpur and Mohammadpur, mental health patients were referred to the National Institute of Mental Health and Hospital. A respondent from Mirpur said they also refer patients to individual psychiatrists.

"The mental health services are not available that much here in Mirpur; we have no alternative other than referring patients to Shyamoli (National Institute of Mental Health and Hospital)" (IDI-6, doctor, female, Mirpur).

Mental health patients of Saidpur were referred to Rangpur city for these services. A few doctors came to Saidpur every week for their chamber practices, and sometimes patients were referred to them.

Table 7. 5: Existing primary and referral facilities for mental health care across the three study sites

Study sites	Primary facility they seek mental health services	Referred to the following facilities
Mohammadpur	1. Private chamber of mental health specialists 2. *Nagar Shastho Kendro* 3. *Dustho Shasthya Kendra*	1. National Institute of Mental Health and Hospital 2. *Paribarik Nirjaton Protirodh Kendro*
Mirpur	1. Health care providers of various NGOs 2. Private chamber of mental health specialists	1. National Institute of Mental Health and Hospital 2. Individual psychiatrists
Saidpur	1. Private chamber of mental health specialists (two mental health specialists come every week from Rangpur for their chamber practice in Saidpur)	1. Private chambers of mental health specialists in Rangpur city 2. Hospitals in the Rangpur or Dhaka

Non-communicable diseases

Burden and perception in the community

Heart diseases, chronic respiratory diseases (Asthma/COPD), and various cancers, including breast cancer, uterine cancer, ovarian cancer, were common in the Mirpur Millat Camp area. A respondent from Mirpur Rahmat camp said that they got many diabetic patients from this area, and asthma/chronic obstructive pulmonary disease (COPD), heart diseases, and cancers including breast cancers and cervical cancers were quite common in this community.

> *"Yes, I will say we are in an epidemic of diabetes. We often get diabetic patients"* (IDI-7, doctor, female, Mirpur).

On the contrary, a senior medical officer from this area reported that there were not many diabetic patients because of their vegetable-rich diet and physical exertion.

A respondent who worked near Mohammadpur Geneva camp said they got patients suffering from diabetes, asthma, COPD, heart diseases, and cancer. In winter, the number of patients seeking healthcare for asthma and COPD increased. Respondents from Saidpur said that patients were suffering from hypertension, diabetes, CRD, and cancer in their communities. Another respondent said that hypertension, diabetes, and asthma were common than other non-communicable diseases, and the number of CVD patients was on the rise. He thought the number of diabetic patients was increasing rapidly in Saidpur.

"In our Saidpur, the number of diabetic patients has increased so much, which is unbelievable. Patients above 50 years of age visit us for eye care, and if we perfom tests, 5 out of 10 patients are diabetic. So 50% of patients aged above 50 have diabetes" (IDI-10, doctor, male, Saidpur).

Available health facilities and services

In Mirpur camp areas, patients of non-communicable diseases (NCDs) usually took services from local drug stores instead of hospitals because they feared they would not afford costly diagnostic tests if they visited the hospitals. There is no health center in the camp area dedicated to NCDs. Patients were usually referred to the National Institute of Cardiovascular Diseases or National Heart Foundation for heart diseases, Kidney Foundation Hospital for renal diseases, and BIRDEM for diabetes. A respondent from a health facility near Mirpur Millat Camp said that they provided primary management of CVD and referred patients to the National Heart foundation or NICVD. Chronic respiratory illnesses were treated by consultants of this facility. If they could diagnose a cancer patient by laboratory investigations, they referred that patient to the National Institute of Cancer Research and Hospital. Diabetic patients of this area usually take their services from a branch of BIRDEM at Mirpur 10. A respondent from the BAPSA Model Reproductive Health Clinic Maternity Clinic near Mirpur Rahmat Camp said they have breast cancer and cervical cancer screening facilities and referred any diagnosed patient to the National Institute of Cancer Research and Hospital and Ahsania Mission Cancer Hospital. Delta Medical College and Hospital was also available for cancer treatments, but it was pretty expensive. National Heart Foundation and NICVD provided services for CVD patients, and some patients also took services from private chambers of consultant physicians. There was a branch of BIRDEM at Mirpur 2, which was available for diabetic treatments.

Mohammadpur Geneva Camp had no existing health center for NCDs. Patients were usually referred to specialized hospitals. Patients were referred to the National Institute of Cardiovascular Diseases for CVD, BIRDEM for diabetes, Shaheed Suhrawardy Medical College and Hospital for CRD. Patients were also referred to TB Hospital for asthma/COPD.

A medical officer from *Dushtha Shasthya Kendra* near Mohammadpur camp said that they provided healthcare for NCDs. They provided treatments, including oxygen therapy and nebulization for asthma/COPD patients. Diabetic patients got their treatments from this center too. In case of emergency heart diseases like acute myocardial infarction, they provided the primary management and referred the patient to the National Institute of Cardiovascular Diseases. Moreover, they had an oncology department in this center, and many cancer patients were getting chemotherapy from this facility. They even had facilities for cancer surgery. CVD patients from the community could get their treatment from the National Institute of Cardiovascular Diseases. Every general hospital in this area could provide care

for chronic respiratory illnesses. Dhaka Central Hospital and Shaheed Suhrawardy Medical College and Hospital also provided asthma/COPD patients with health services.

A respondent from Saidpur said that there were no consultants for cardiology and endocrinology in government health facilities in Saidpur. There were some private chambers of consultant physicians which provided necessary services for NCDs to some extent. The respondent worked at a diagnostic center that provided only supportive care for diabetes, hypertension, and chronic respiratory diseases. They referred cancer patients to higher centers. Patients of Saidpur Golahaat Camp usually took services from local drug stores for chronic respiratory diseases and hypertension. There was a government health center that provided primary management only. A doctor from Marium Eye Hospital said that they provided primary management of NCDs only when they found these problems in patients taking their services for eye diseases and suggested them to take further consultation from specialist doctors. According to one respondent, they also referred diabetic patients to Saidpur Diabetes Samiti Hospital, which provided good care for diabetic patients. There was no specialized center for diabetes, though consultation at private chambers was available. Another respondent from Saidpur reported that though diabetic patients got some services from Saidpur Diabetic Hospital, there was no specialized center for CVD. CVD patients usually visited the 100-bedded government hospital of Saidpur, and many of them were referred to Rangpur. Those who had the financial ability took services from private chambers of doctors, but the poor people of the community suffered because of this situation.

Need for facilities and services

A respondent from Mirpur Muslim camp suggested that a small hospital or NGO-operated clinic should be established within this camp area to provide services for NCDs. A senior medical officer who worked near Mirpur Millat camp suggested that at least two one-stop centers should be created in each Thana for NCD treatments to lessen the suffering of these patients. She opined that establishing specialized hospitals should not be considered as the only solution; awareness programs should be arranged to educate people about preventive measures of CVD and CRD. She added that we should give more emphasis on early detection and regular screening for uterine cancer.

> *"VIA or PAP smear tests should be done at regular intervals. After doing a test, if we do not see any problem, patients think that we did that test without any reason. We need to make them understand that these tests are not done aimlessly, and awareness should be raised about doing these tests even if they do not have any symptoms. Then we will be able to prevent some diseases, I think"* (IDI-6, doctor, female, Mirpur).

She also mentioned that after referring patients to Kurmitola Medical College, they sometimes did not get admitted due to lack of beds, and then they need to refer those patients again to Dhaka Medical College. In this case, these patients had to travel again, and there was another issue of traffic jam. An emergency patient might get worse if her/his treatments get delayed because of a delay in transport. She thought there should be more specialized facilities in nearby areas so that people can get access health services more efficiently. A respondent from the BAPSA Model Reproductive Health Clinic Maternity Clinic near Mirpur Rahmat Camp suggested that instead of opening separate health centers, we can establish a hospital near this camp to provide comprehensive healthcare for NCDs. She believed that patients would be benefitted from such initiatives.

Respondents from the Mohammadpur region suggested that more health centers for diabetes and cancer treatment should be established to meet the healthcare need of this population. Though there were specialized centers for CVD and CRD, people should be informed of these health centers and their services. They also suggested educating people about the importance of early detection and lifestyle modifications regarding NCDs.

A medical officer from Saidpur opined that specialized care for NCDs such as CVD, CRD, diabetes, and cancers should be increased. She added that poor patients of Saidpur could not access costly health services, and quality service at low cost should be arranged for these people.

> *"I feel that there is no good organization here that will provide service for everyone or the poor people. I do not know whether it will be beneficial to talk about these issues with you. I worked with BRAC before; they provided services at an exceptionally low cost. I worked at Surjer Hashi Clinic in 2012 when the consultation fee was 40 taka, increasing to 200 takas now. Our country's situation is not that good that people will be able to pay this much money"* (IDI-8, doctor, female, Saidpur).

A respondent from Saidpur Golahaat Camp said that people of this community must go outside to consult with a doctor, and nearby health facilities could not meet their healthcare needs. A respondent from Marium Eye Hospital said that Saidpur needed health facilities with the capacity to manage emergency cases related to NCDs. He was also concerned about the care-seeking behavior of this community people. He reported that most people take services from local drug stores. He suggested that awareness campaigns should be arranged to inform them about available healthcare centers and their services and educate them about the importance of lifestyle modifications regarding the prevention and control of NCDs. A respondent from Saidpur Munshipara Railway Colony camp suggested that there

should be a doctor available within their camp area for heart diseases. He added that most of the people of this community could not afford cancer treatments.

Existing referral system

Table 7.6 presents the health facilities where patients were being referred for any CVD, CRD, diabetes, cancer, and other NCD-related complications in the community. It was identified that patients of Mirpur camp areas were usually referred to the National Heart Foundation or National Institute of Cardiovascular Diseases for CVD, to BIRDEM Hospital at Shahbagh or any other branch of BIRDEM at Mirpur 10 or Mirpur 2 for diabetes, to Shaheed Suhrawardy Medical College and Hospital or NIDCH for CRD. For cancer treatments, they were referred to the National Institute of Cancer Research & Hospital. Patients of Mohammadpur Camp areas were usually referred to specialized hospitals. Patients were referred to the National Institute of Cardiovascular Diseases for CVD, BIRDEM for diabetes, and Shaheed Suhrawardy Medical College and Hospital for CRD. Patients were also referred to TB Hospital for asthma/COPD and National Heart Foundation if patients could not get any beds in NICVD. For cancer treatments, they were referred to the National Institute of Cancer Research & Hospital. Patients of Saidpur camp areas were usually referred to Diabetic Samiti Hospital for Diabetes, a 100-bedded government hospital for CVD. A medical officer from Saidpur said that she referred patients to Rangpur Medical College and Hospital.

Table 7.6: Existing referral facilities for non-communicable diseases

Diseases	**Referred to the following facilities**		
	Mohammadpur	**Mirpur**	**Saidpur**
Diabetes	1. BIRDEM 2. Central Hospital	1. BIRDEM Hospital at Shahbagh or any other branch of BIRDEM at Mirpur 10 or Mirpur 2	1. Saidpur Diabetes Samiti Hospital
Cardiovascular Diseases (CVD)	1. National Institute of Cardiovascular Diseases	1. National Institute of Cardiovascular Diseases (NICVD) 2. National Heart foundation	1. 100-bedded Government Hospital, Saidpur
Renal/kidney disease	1. Shaheed Suhrawardy Medical College and Hospital	1. Kidney Foundation Hospital	1. 100 Bedded Government Hospital, Saidpur 2. Rangpur Medical College and Hospital
Cancer	1. National Institute of Cancer Research & Hospital	1. National Institute of Cancer Research and Hospital 2. Ahsania Mission Cancer Hospital 3. Delta Medical College and Hospital	1. 100-bedded Government Hospital, Saidpur 2. Hospitals in the Rangpur City
CRD	1. Shaheed Suhrawardy Medical College and Hospital	1. Shaheed Suhrawardy Medical College and Hospital	1. 100-bedded Government Hospital, Saidpur 2. Rangpur Medical College and Hospital
Other NCDs	1. TB Hospital for asthma/COPD	1. Shaheed Suhrawardy Medical College and Hospital 2. Kurmitola Medical College 3. Dhaka Medical College	1. Rangpur Medical College and Hospital.

RESULTS: SEXUAL AND REPRODUCTIVE HEALTHCARE-SEEKING BEHAVIOR AMONG ADOLESCENT GIRLS

A total of 58 adolescent girls participated in the FGDs. Among them, 40 girls were in the late adolescent group (15-19 years), and the rest belonged to the early adolescent group (10-14 years). The average age of adolescent girls was 16.05 years. Most (44 out of 58) of them were students and were in secondary schools (grade 6 to grade 9). The majority of the respondents were unmarried (49 out of 58).

To explore the sexual and reproductive health (SRH) problems among adolescent girls, we conducted nine FGDs across the three study sites. From the FGDs, we tried to identify the most common SRH related issues/problems among this population with a brief free listing exercise. The SRH issues varied according to the area of residence. We listed the SRH problems in the three groups (most common, common, and less common) of the camp of Mirpur (**Annex Table 1**), Mohammadpur (**Annex Table 2**), and Saidpur (**Annex Table 3**) in the annex section. The findings identified that early pregnancy and childbirth and unwanted pregnancy as the most common SRH problem among the three selected camps. Among the adolescent girls of Mirpur, child marriage, early pregnancy, and childbirth were the most common problem, whereas sexual abuse and unwanted pregnancy were common. On the other hand, post-partum hemorrhage was the least common problem mentioned. In Mohammadpur, sexual violence was common, and post-partum hemorrhage was less common.

In the camp of Saidpur, respondents identified weakness and lack of concentration during menstruation, lack of knowledge regarding menstruation before it occurs, and white discharge (per vagina) as the most common SRH problems. On the other hand, physical abuse and genital irritation during menstruation were common SRH problems. Pre-marital pregnancy and irregular menstruation were identified as comparatively less common problems.

Sexual and reproductive health (SRH) problems among adolescent girls

Menstruation

First experience of menstruation:

In most cases, the age of the first menstruation was 12 years. The age range of menarche among adolescent girls was 9 to 15 years. Most girls did not know about menstruation before their first menstruation occurred and feared the bleeding. As expressed by the adolescent girls, '*I was scared to see what was happening', 'I was wondering what would happen next', 'I wonder if it has been cut.'* in different FGDs.

The majority of them reported their first menstrual bleeding to their mother. Some also reported to the other family members, such as elder sister, sister-in-law, and grandmothers. During their first menstruation, adolescent girls of Mirpur and Mohammadpur camp mostly used sanitary napkins. However, in Saidpur, all of them used cloth.

The current study also explored who was the supplier of the materials they (adolescent girls) used during their first menstruation. All girls reported that the person they reported first was the supplier of these materials.

Experience regarding menstruation:

Most of the girls reported that they were having menstruation on a regular basis. Though there were scared during their first menstruation, they cope up with the situation. Adolescent girls of the camps in Mirpur and Mohammadpur area were using sanitary napkins mostly, while the girls of Saidpur camp were using both cloth and sanitary napkins equally. Adolescent girls of Mirpur and Mohammadpur camp reported feeling comfortable using sanitary napkins. They opined that they might get infected if they used cloth. The additional task associated with using cloth was cleaning and drying properly, which was quite difficult in the camp area.

> *"I use pads. It is convenient to use a pad. It is convenient to move out. Moreover, the pad is safe" (*FGD-5, adolescent girl, Mohammadpur).

> *"The cloth we use has to be dried in the hot sun. However, our environment is not so. We cannot dry clothes in an open environment. So, using cloth for menstrual purposes is not healthy. We cannot dry the cloth properly because it has to be dried secretly" (*FGD-8, adolescent girl, Saidpur).

In Saidpur, maximum adolescent girls used cloth because they were not feeling comfortable using sanitary pads and were also facing the problem of discarding them. Some of them also stated that they do not feel comfortable using cloth and there is a risk of infection, but when they did not have enough money, they had to use cloth. Two girls of Saidpur also mentioned that it would be better to have a toilet with menstruation management facilities such as a bin.

Physical discomfort/illness during menstruation:

The adolescent girls suffered from various physical and psychological problems during their menstruation. Most of them reported suffering from dysmenorrhea, pain in the waist, tiredness, and

mental irritation. Pain in the leg, groin, and anorexia were also common among them. However, pain in the knee, fever, nausea were less common among the respondents. As stated by a study participant:

*"At first, I feel extremely uncomfortable. I feel lazy to do anything. The mood is irritable. It was a very annoying thing. Moreover, prayers and the Quran recitation are not allowed during this period. It feels a little worse. It looks dirty even after taking a bath" (*FGD-5, adolescent girl, Mirpur).

"Nothing feels good at that time. I want to lie down all the time. I do not want to go out. If I need to go out suddenly, I must cancel it. I do not want to go anywhere. I have extreme abdominal pain during this period."(FGD-5, adolescent girl, Mirpur).

Sources of information:

Family members such as mother, sister, aunt, sister-in-law were the primary source of information regarding menstruation across the three study locations.

Cultural norms/taboos:

The study identified several cultural norms and taboos associated with menstruation among adolescent girls. Among them, restriction to eating fish, egg, cucumber, sour food was the most commonly mentioned taboos. Additionally, restriction to going outside and jumping, especially in the evening, was also mentioned by several respondents. As stated by one FGD participant:

> *"First of all, I cannot go out; I have to stay clean, I have to take a nice bath, I was not allowed to eat cucumber during the period" (*FGD-5, adolescent girl, Mirpur).

> *"My mother told me to go out less and bathing cannot be done on the first day. I asked why but my mother told me to do this without any further explanation" (*FGD-5, adolescent girl, Mirpur).

Few other girls also mentioned restrictions to praying and touching the Holy Quran and going to the shrine during menstruation.

Menstruation related challenges:

Adolescent girls were facing many challenges related to menstruation. They were suffering from both physical and mental discomfort during menstruation. However, they hardly go to health care providers because of shyness. They believed in many taboos and had to maintain some restrictions. Though sanitary napkin was easily managed in Mirpur and Mohammadpur, the girls of Saidpur had to save

money on their own if they wanted to buy sanitary napkins. Those who used cloth during menstruation had to face problems while drying the cloth in the sun as they had to dry those secretly.

Family planning (FP) methods and commodities

Knowledge of family planning (FP) methods and commodities: Among the FGD participants, the married adolescent girls knew about FP methods and commodities. Among the unmarried adolescent girls, very few girls only heard the name of the FP methods but did not have any further idea about them. Most girls who knew about FP methods reported that condom was the best FP method, followed by oral contraceptive pill and subdermal implant.

Sources of information: The respondents were informed of the FP methods after getting married. There was a belief that FP methods should be started at least after giving birth to one child. Some reported that they got informed of FP methods from the hospital after the delivery of their first baby. For two respondents, their (already) married friends were the source of FP-related information. One girl also reported that she knew about FP from her maternal aunt, and another participant got the information from her paternal aunt.

The practice of FP methods and commodities: The girls reported various FP methods and commodities that their married friends, family members, and neighbors use, such as oral contraceptive pill (OCP), subdermal implant, injectable contraceptive. Few of them also mentioned condoms. One respondent of Mirpur camp started using OCP, and another respondent of Mohammadpur camp used injectable contraceptives.

Available FP services: The adolescent girls availed FP services mainly from the family planning centers, Marie stopes clinic, and the adjacent pharmacy or medicine shops.

Unwanted pregnancy, menstrual regulation, and abortion

Incidence of unwanted pregnancy: Only a few girls reported unwanted pregnancies that occurred with their friends, family members, or neighbors. According to them, pre-marital pregnancy was less common compared to unwanted pregnancy after marriage.

Consequences and management: Three of the respondents reported about the termination of the baby by induced abortion in the hospital. One girl reported that one of her friends had a miscarriage that occurred at the 3rd month of pregnancy. Another girl reported a pre-marital pregnancy that continued after getting married, and she gave live birth.

*"I heard a friend was in a relationship with her boyfriend, they were supposed to get married, almost everyone knew, later they seemed to be getting closer, so the girl was pregnant, but then the boy did not marry her. Then the boy said, that you are doing this to me; who knows if you have done it before. I will not accept you now. You do abortion. I will give as much money as it takes. They had an abortion and since they had no contact" (*FGD-5, adolescent girl, Mirpur).

Another girl of the same FGD in Mirpur reported the termination of the unwanted pregnancy by medication. According to her:

"I mean, she is married, she is pregnant, but now do not want to have children. After taking the pill, she is having an abortion".

A girl from Saidpur reported that her sister's pregnancy was terminated through D& C (dilation & curettage), but she did not know the incident in detail.

Sources of information: The girls directly knew about the person who had an unwanted pregnancy. Only one girl reported that she did not personally know anyone who had an unwanted pregnancy. She heard when her mother and other women discussed the way of termination of the unwanted pregnancy.

Maternal health care (particularly for adolescent girls)

The present study revealed limited information regarding pregnant adolescent girls' maternal health care because most of the participants were unmarried and did not know much about the other adolescent girl's maternal health care. Women, including adolescent girls of Mirpur camp, mainly went to the BAPSA (Association for Prevention of Septic Abortion) Maternity clinic, BRAC Urban Health Centre, Marie Stopes, RADDA MCH-FP Center, and other adjacent private clinics for ANC and delivery. In Mohammadpur, the majority went to the Family planning clinic, Marie stopes, Suhrawardy Medical College and Hospital, and Mohammadpur Fertility Centre. On the other hand, in Saidpur, they went to *Surjer Hashi* clinic, *Sobuj Chhata* clinic, 100-bedded government hospital, general hospital, and other private clinics such as Plaza clinic, Doctor's clinic, Green Lab, Sheba clinic, and Popular Medical.

Sexually transmitted diseases/infections (STD/STI)

The adolescent girls in the study areas had little idea about STD/STI. One respondent spoke about HIV infection. They did not recognize the symptoms as STD/STI. The most reported symptom of STD/STI was white discharge. Others also reported itching in the genital area, burning sensation during micturition, and urinary tract infection.

Sexual violence, abuse, and related suffering (both physical and psychological)

Only a few respondents reported sexual and physical violence. They mentioned rape, humiliation, slapping, beating, and eve-teasing. Six respondents talked about rape that occurred in their community. A girl said that a few years back, a 9–10-year-old girl was raped by a 50–55-year man who was a neighbor of that girl. Another reported that a shopkeeper raped her daughter (a girl of 4 years old) in the camp area.

A girl from Mohammadpur reported another rape case. She said that a 50-60-year-old male invited a 6-7-year-old girl to give her chocolate in his house and then raped her. The child was then running out of the house and crying. An adolescent girl of Mirpur camp stated that three months ago, a 6–7-year-old girl was raped by her father. Another girl from Mirpur camp mentioned that a 55–60-year-old male raped a girl in her camp. After that, the girl was physically injured and admitted to a hospital for a long time. The other three girls reported domestic violence. The main reason for domestic violence was dowry.

> *"A 14-15-year-old girl got married, then after two days, her husband demanded dowry. Sometimes, he does not give food and beat her whenever he wishes" (*FGD-1, adolescent girl, Mohammadpur).

Two girls stated that the addicted husbands beat their wives for money. The same respondents talked about domestic violence. Because of the sexual and physical violence, victims got physical injuries. Four respondents informed that victims of rape cases were admitted to the hospital.

Reproductive and sexual healthcare-seeking behavior and practices

We found that most adolescent girls did not seek any reproductive and sexual health care services.

The reasons for seeking health care and the providers

Menstruation: During menstruation, many of them suffered from abdominal pain and mostly consulted with their mothers. However, they were hardly seeking proper health care for this. Few of them went to a doctor. Most of them were trying to cope with the illness and apply home remedies. One respondent informed that there was a belief that if they took medicine for painful menstruation, there would be a problem to conceive in the future. One of the respondent's mother went to a homeopath for her daughters' menstrual problem.

FP methods and commodities: Few respondents were married, and there was only very little information regarding preference for FP services. Two respondents reported that after delivering their first baby to the hospital, they were advised to take FP methods from health care providers of that hospital.

Unwanted pregnancy (including pre-marital pregnancy), MR, and abortion: The respondents reported that none of them had any unwanted (including pre-marital pregnancy) pregnancy. Some of them talked about these issues of their friends and surrounding girls.

Sexually transmitted diseases/infections (STD/STI): Though some of them mentioned STI symptoms (white discharge per vagina), they rarely sought health care for those problems. Only a few of them reported consulting with the doctors regarding STI/STD symptoms.

Sexual violence, abuse, and related suffering (both physical and psychological): Four of the respondents stated that the girls who were raped were physically injured and got admitted to the hospital.

The place they seek SRH services or consultation

Those who sought SRH services, most of them went to the nearer health facility such as the Family Planning clinic, BRAC Urban Health center. One respondent went to a Family planning clinic, and the other respondent reported going to BRAC Urban Health center. They stated that these facilities were near to their camp, within 10 minutes of walking distance.

Experience of the last visit to health care providers for SRH problem

Those who visited the hospitals or clinics mentioned that they were satisfied with the behavior of the doctors and senior nurses but unhappy with the behavior of junior nurses.

> *"The senior doctors speak so beautifully that half of the disease gets better there," and "Junior nurses who are still learning, are terrible, and those who are senior nurses behave well."* (FGD-1, adolescent girl, Mohammadpur).

One respondent mentioned that she liked a health facility because there was a separate area for breastfeeding the baby. However, two girls mentioned that they had to wait in a long serial queue in the government facility, which they did not like.

Preference of providers

The adolescent girls preferred to consult with a female physician regarding their reproductive, sexual, and maternal health problems because they felt comfortable consulting with female doctors.

Facilitators of and barriers to SRH care seeking among the adolescent girls

There was no information on the facilitators of SRH care seeking among the adolescent girls in the study areas. However, this study identified few challenges, such as shyness, financial constraints, the

adolescent girls faced during SRH care-seeking. For example, one of them was feeling shy to share SRH problems with male health care providers. Another barrier was financial, as they did not have enough money to receive health care for SRH issues.

Recommendations on how to overcome the barriers of SRH care-seeking

The respondents suggested different ideas and recommendations to overcome the barriers regarding adolescent girls' SRH care-seeking mentioned above.

- Change in mindset. Raising awareness among their parents and guardian regarding the importance of health care seeking for SRH and should not focused on the gender of the health care provider.

*"We have to change our thinking. Doctors are doctors, whether they are male or female. I will go to get the services from them. People in our family say that girls do not need to study much, if so, how a girl can be a doctor" (*FGD-5, adolescent girl, Mirpur)

- It would be better if there is a clinic within the camp to easily seek health care for their SRH problems.
- The provided treatment should be free of cost for the treatment.

RESULTS: SEXUAL AND REPRODUCTIVE HEALTHCARE-SEEKING BEHAVIOR AMONG ADOLESCENT BOYS

The total number of adolescent boys who participated in the FGDs was 57 (minimum six boys to maximum seven boys per FGD). Most (43 out of 57) adolescent boys were from the late adolescent group (15-19 years). The average age of the adolescent boys was 16.21 years (minimum 13 years to maximum 19 years). A total of 36 boys were students. Among the rest, 11 boys were involved in different monthly salaried jobs. Other boys worked and earned wage daily (income-generating activities: motor mechanic (2), mobile mechanic (1), electronic mechanic (1), barber (1), butcher (1), tailor (1), driver (1), day laborer (1), and small business (1). Most adolescent boys (45 out of 57) completed at least primary education, and three boys passed the secondary school certificate (SSC/Grade 10) examination. Three other boys passed the higher secondary school certificate (HSC/Grade 12) examination. All the adolescent boys were unmarried except one from Mohammadpur Town Hall camp.

Sexual and reproductive health (SRH) problems among adolescent boys

To explore the sexual and reproductive health (SRH) problems among adolescent boys, we conducted nine FGDs across the three study sites. From the FGDs, we tried to identify the most common SRH related issues/problems in this population with the help of a brief free listing exercise. The SRH issues varied according to the area of residence. Therefore, we have listed the SRH problems in the three groups (most common, common, and less common) of the camp of Mirpur (**Annex Table 4**), Mohammadpur (**Annex Table 5**), and Saidpur (**Annex Table 6**) in the annexure section.

Eve-teasing, anxiety disorder, drug addiction, masturbation, and watching porn videos were identified as the most common SRH related problems/issues among the adolescent boys in Mirpur camp areas. In Mohammadpur, the most common SRH issues among adolescent boys were masturbation, eve-teasing, anxiety disorder, drug addiction; the common problems/issues were snatching, drug business, wet dream, sleep, and eating disorders. In Saidpur, anxiety disorders, drug addiction, eating disorders, family and peer conflict, unintended injuries, and wet dreams were mentioned as common SRH related problems.

The onset of puberty and related sexual behaviors

Male adolescents who participated in these nine FGDs identified a wide array of changes as signs of pubertal development and most frequently mentioned the following: rapid physical growth, growth of facial and pubic hair, voice change. In addition, they were well aware of psychological changes like the

development of personal and sexual identity, self-dependence, low self-esteem, depression, getting sexual feelings, and attraction towards the opposite gender.

Physical changes related to puberty (discomfort/illness)

Most of these participants described their experience of nocturnal emission as an uncomfortable incident. Many of them did not have any clue about this issue before it happened to them. Usually, they shared this issue with their friends and close elders. Some adolescent boys said they talked with their mothers about the physical changes, but only a few reported that they talked with their fathers regarding these issues.

> *"I share everything with my mother. Even if someone wants to have a love affair with me, I share that incident with my mother. My mother is my friend"* (FGD-4, adolescent boy, Mirpur).

Adolescent boys, mainly from Mohammadpur and Mirpur camps, reported that many adolescent boys in their community were addicted to alcohol and substance abuse. They mentioned phensedyl, yaba, and marijuana. However, none of the respondents declared any experience of using tobacco products, alcohol, or drugs.

Masturbation was another issue the participants frequently mentioned. Some of them associated masturbation to the loss of intelligence, loss of good health and memory, and development of acne. Many boys shared that they watched porn videos, and some watched these videos together with their friends. One of the respondents said that porn videos encouraged viewers to masturbate, and eventually, they become addicted to sexual matters. Another boy added that those who masturbated frequently would be less likely to perform sexual intercourse in their later life.

Some of the respondents reported several incidents where adolescent boys caused deliberate self-harm, and these incidents were usually associated with problems with their love affairs. Few respondents said that they were becoming thin, bony and sometimes they felt drowsy and unwell. They also mentioned they did not eat on time. Only one adolescent boy was married among these respondents, but his wife was not living with him for around one year because he was suffering from premature ejaculation.

Management of physical changes related to puberty (discomfort/illness)

The lack of learning opportunities about sexual and reproductive health contributed to misconceptions among these teenagers and eventually affecting their care-seeking behavior and approach to managing SRH problems. For example, in Mohammadpur Geneva Camp, adolescent boys thought doctors could not perform circumcision properly, and problems like pain, infection, and delayed wound healing may occur after getting a circumcision from them. Some individuals in their community have been performing this procedure for a long time, and these adolescent boys opined that these individuals were

better at performing circumcision than doctors. One respondent mentioned an incident where the circumcised boy experienced bleeding and seminal discharge, and he believed this complication happened because that boy removed his bandage and ate sour fruits.One respondent from Mohammadpur Geneva camp stated that girls had more *sex power* than boys. Another respondent believed Seclo (a medicine used for peptic ulcer disease) could increase libido.

> *There is a medicine named Seclo, and it is awful. It increases sexual desire. Listen, Seclo means sex. That is why I want this medicine to be banned"* (FGD 1, adolescent boy, Mohammadpur).

Another respondent suggested that to tackle porn addiction; boys should go out with friends less frequently, keep themselves busy with their works, and use their intelligence for doing good things. Another boy opined that young people should not be allowed to use a mobile phone. He was asked whether it was possible to live without using a mobile phone and control its use. He said guardians should be careful and watch over their children and monitor what keeps them busy.

Challenges related to physical changes of puberty (discomfort/illness)

Most of the adolescent boys reported that they did not have any prior knowledge about wet dreams. They were afraid and uncomfortable after their first experience and questioned themselves why this happened. Later, they talked about this with their friends or elders and understood that it occurs to everybody. The findings revealed that those who had prior knowledge about nocturnal emission tackled this situation without any worry.

> *"No, I did not have any idea. I was afraid why did this happen to me. At first, I shared with my friends. Then they told me that it is not a big deal, and it happens to everybody"* (FGD-8, adolescent boy, Saidpur).

The boy who had been suffering from premature ejaculation did not take any treatment for his problem. He talked about this with his sister's husband and a friend, but none of them provided him with any appropriate suggestion.

One school-going teenager said that their teachers tried to talk about physical changes related to puberty, but they could not adequately describe many issues. These boys got some ideas about puberty and related physical changes from their biology textbook.

Family planning (FP) methods and commodities

Knowledge of family planning (FP) methods and commodities: 56 adolescent boys out of 57 were unmarried, and most of them hesitated to talk about family planning methods. Those who responded commonly singled out condoms as the best family planning method. Though many of them could not name or describe family planning methods adequately, they talked about contraceptive pills, injectable birth control measures, and withdrawal methods. Some of the boys thought abortion was a form of birth control measures.

Sources of information: School-going adolescent boys mentioned a lack of educational materials on family planning in their curriculum, and the teachers were not entirely comfortable talking about these things. Many boys described porn videos as a potential source of sex education. Others learned about birth control methods from their friends.

> *"Some boys learn about these by watching 'blue films.' Others learn by discussing with their friends."* (FGD-4, adolescent boy, Mirpur).

Some of them talked elaborately about Ayurvedic potions and medicines which can be used to prevent pregnancy or even as abortifacients. They learned about these remedies from some books on Ayurvedic treatments. The present study revealed a significant gap in knowledge about family planning as there was no opportunity for formal learning on birth control for these male adolescents. As a result, myth and misconception took the place of scientific knowledge.

> *Suppose someone stopped her menstruation by taking pills, then she will not get pregnant. But, if she changes her decision in the future, she will never be able to conceive. That is why condom is a better choice"* (FGD-5, adolescent boy, Mirpur).

The practice of FP methods and commodities (by boys and their neighbor): None of these adolescent boys was married except one. The married male denied any practice of family planning methods, but he said his wife used to take contraceptive pills. Other respondents in these FGDs denied any experience of sexual relationships and said they did not have to use any family planning method as they were unmarried.

Available FP services: Although none of these participants used family planning methods, they informed that family planning methods were available in the nearby drug stores. They aso suggested that females mostly access family planning clinics of these camps.

Sexually transmitted diseases/infections (STD/STI)

Almost everyone from these nine FGD hesitated to talk about STDs. Most of them heard about HIV/AIDS, probably because of awareness campaigns and talks in the media. However, they failed to mention any other STDs. Adolescent boys of these camps had many misconceptions about HIV/AIDS. There was one respondent who believed that people who used condoms might end up with AIDS. He mentioned sanitary napkins as a potential cause of HIV infection. Another respondent from Mohammadpur Market Camp mentioned that HIV could be transmitted by sharing foods or clothes. An adolescent from Mirpur Rahmat Camp thought that an AIDS patient should be kept in a separate room and should be given separate utensils for their use.

> *"This is an infectious disease. It is not transmitted by touching hands. Suppose I have AIDS. If he wears my clothes or eats from my plate, then he will get the disease"* (FGD-3, adolescent boy, Mohammadpur).

Regarding the person-to-person transmission of HIV, they thought they could get this disease if they had sexual intercourse with an HIV-positive female. Most of them did not mention that a male person could also act as a source of HIV. Some of these adolescent boys directly blamed girls for this disease, and they believed girls were the most common carrier of HIV.

> *"This is an extremely dangerous disease. Girls are mostly affected by this. I do not know why. But this is usually mentioned in our discussion with friends. Girls are mostly affected because they have more desire"* (FGD-5, adolescent boy, Mirpur).

According to the findings from all nine FGDs, none of these adolescent boys complained about any sexually transmitted diseases. However, some of them suffered from itching rash and blisters around their genitals and inner thighs. One of these respondents related such issues to excessive sweating. Some of them were prescribed anti-fungal creams from local drug stores.

Sexual violence, abuse, and related suffering (both physical and psychological)

None of these adolescent boys reported any sexual violence, abuse, and related sufferings on their part. However, FGDs uncovered a tendency of these teenagers to cause self-harm because of problems with their love affairs. Respondents talked about several incidents where adolescent boys became addicted to drugs, deliberately cut their skin, took poison, and even attempted suicidal hanging.

A respondent from Saidpur Munshipara Camp attempted suicide by taking insecticide after failure in a love affair. He was taken to a hospital, and gastric lavage and other treatments were given. It took 12

days for him to recover. A boy of Saidpur Abashon Camp said those who survived a suicidal attempt faced different social problems like being teased by their friends. Therefore, these survivors tried to avoid people and stayed alone. He added that many of them started substance-abusing too. However, a respondent from Saidpur Abashon Camp thought that the number of suicide cases is decreasing, and teenagers did not leave their homes to get married because parents were more accepting of love marriages.

Moreover, teenage love affairs resulted in clashes among adolescent boys. Some of these respondents admitted that they were involved in such conflicts. A boy from Saidpur Golahat Camp was beaten up by a relative of the girl he was dating.

Boys of Mohammadpur Camp talked about eve-teasing, and one respondent talked about a boy of their camp who used to force girls to have sexual intercourse. The respondent, along with other members and leaders of their community, beat that boy.

A respondent from Mirpur Millat Camp described an incident where a woman blamed his husband for raping their daughter. According to him, the woman wrongly accused her husband and did this because of some other family problem.

Arguments and minor conflicts were common in all nine camps. However, teen-gang violence was reported in the FGD of Mohammadpur Town Hall Camp and Mohammadpur Market Camp. Respondents from Mohammadpur Market Camp described an incident in which an adolescent boy was stabbed with a knife because of teen-gang rivalry. Usually, orphan boys were included in these teen-gangs, and during gang violence, adolescent boys were paid for their participation.

> *"An individual, a senior brother, leads them. All expenses are given. They take care and manage medicines and solve other problems. Boys who have no parents are taken, and they create their own gang"* (FGD-3, adolescent boy, Mohammadpur).

> *"Brother, I heard from our camp that 500 taka are given for throwing a piece of brick"* (FGD-3, adolescent boy, Mohammadpur).

Reproductive and sexual healthcare-seeking behavior and practices

Except for a few adolescent boys, none of them consulted SRH issues with any health care providers.

> *"You (FGD facilitator) are the first person I am seeing who is working on this service, and this is the first time I am sharing my problems. I never talked about these issues with anyone else before"* (FGD-1, adolescent boy, Mohammadpur).

The provider of consultation or health care

Physical changes related to puberty (discomfort/illness): Most of the respondents did not seek consultation or health care for physical changes related to puberty. Usually, they talked about these issues with their friends and close elders in their community. Some boys discussed their problems with their mothers and followed religious instructions.

Family planning (FP) methods and commodities: Only one adolescent boy was married out of 57 respondents, and that boy did not use any family planning method though his wife used to take contraceptive pills.

Sexually transmitted diseases/infections (STD/STI): None of these boys suffered from any STDs. However, the married boy from Mohammadpur was suffering from premature ejaculation, but he did not take any treatment for this problem.

Sexual violence, abuse, and related suffering (both physical and psychological): None of these adolescent boys reported any sexual violence, abuse, and related sufferings on their part. Some of them were involved in minor conflicts and fights, and one respondent was beaten by a relative of his girls friend. However, none of them required any hospital care. A respondent from Saidpur attempted suicide by taking insecticide, and he was admitted to a hospital and recovered after the treatment.

The place they seek SRH services or consultation

The study revealed that most of the respondents did not seek SRH services. Boys from Mohammadpur Geneva Camp preferred local drug stores for any healthcare services because of their negative experience with hospital care. Respondents from other camps preferred to take hospital services, but they could not always access services because of financial issues. In such cases, they took services from nearby drug stores.

All camps were situated in the urban area, and they had hospitals nearby. In Saidpur, adolescent boys mostly preferred government facilities because of the low-cost treatment options. Sometimes, they

avoided taking services from nearby private hospitals; instead, they traveled a long way to visit government health facilities.

Experience of the last visit to health care providers for SRH problem

Adolescent boys of Mohammadpur Geneva Camp preferred to take services from the local drug store. Other respondents liked to consult with the doctors. They visited healthcare centers for the treatment of their family members and friends. Adolescent boys visited health care providers mainly for the treatment of their family members. Except for a few, they were pretty satisfied with the quality of service of doctors. Some adolescents from Saidpur reported that they were not satisfied with the behavior of nurses.

Those who visited healthcare facilities complained that they had to wait a long time to get their desired services. On the other hand, these boys liked government facilities for their low-cost treatment though some of them mentioned inadequate medicine supplies and diagnostic facilities of government hospitals.

Preference of providers

Respondents of Mohammadpur feared that doctors might not behave well. In addition, they used to visit a drug store of their locality from their childhood, and they got their circumcision in that place. So, they preferred to go there for any problem. Adolescent boys from other camps understood that they should consult with a doctor for their health issues, but they could not consider this option because of their financial crisis.

Facilitators of and barriers to SRH care seeking among the adolescent boys

Facilitating factors: This study found a significant gap in SRH care-seeking behavior among adolescent boys in the study areas. Very few of these adolescent boys visited any healthcare facility for any SRH problem. However, many of them visited government and private hospitals to treat their family members and friends. Three FGDs of Saidpur camps showed adolescent boys preferred government hospitals because of the low-cost treatment options. As private hospitals of their locality are expensive for them, they traveled a long distance to avail cheaper options.

> *"We visit Rangpur Medical College Hospital not only for better treatment but also because we can get treatment there for a small amount of money"* (FGD-8, adolescent boy, Saidpur).

A respondent from Mohammadpur Geneva Camp said they did not fear to visit their local drug store because it was a friendly and familiar place as they had their circumcision there, and it provided low-

cost treatments. Respondents from Saidpur were quite satisfied with doctors' behavior and services and wanted to visit hospitals instead of going to local pharmacies for health services.

The barriers faced during SRH care-seeking: Several barriers faced by the adolescent boys during SRH care-seeking identified in this study are as follows:

Shame and discomfort: Most of these adolescent boys said they felt shy and uncomfortable talking about SRH issues. Except for a few cases, parents and teachers did not talk about sexual and reproductive health with these boys.

> *"No one talks about 'wet dream' because they feel shy. If you can help me to overcome my shyness, only then I will visit hospitals"* (FGD-2, adolescent boy, Mohammadpur).

Privacy concerns: Some of these boys were worried about the risk of a privacy breach. They did not share their problems with someone whom they do not trust completely. Many of them experienced humiliation after talking about these issues. One boy said if a service provider disclosed their private matters or blackmailed them, it would cause more pain than the original problem.

> *If I share my problems with a doctor, I fear that what will happen if he discloses my personal matters to other people*"(FGD-1, adolescent boy, Mohammadpur).

Negative Experiences with healthcare providers: Though most of the respondents of Saidpur camps were satisfied with the behavior and quality of service of the doctors they visited, few boys from Mohammadpur Geneva Camp feared doctors might not cooperate and behave well if they seek SRH care. An adolescent boy from Mirpur Muslim Camp said that his father died because of the negligence of doctors, and he said doctors only prescribed medicines and did not explain anything to the patients. Some adolescent boys of Saidpur camps complained about nurses and said they were not well behaved and did not even talk properly.

> *"Kabiraj (herbalists) know many things, and it is possible to share everything with a kabiraj. People visit doctors for their problems, and doctors only write prescriptions. Do not explain properly. But if people visit kabirajs, they explain everything clearly" (FGD-5, adolescent boy, Mirpur).*

Environment and distance of healthcare facilities: Many adolescent boys who visited healthcare facilities complained about the offensive smell and unclean environment. Respondents from Saidpur

camp areas said no affordable nearby health centers provided good treatment, and they traveled to Rangpur (42 km away from their dwelling place) to seek better health services.

> *"Many insects were there. I saw cockroaches. Full of cockroaches. Even I saw cockroaches in their foods"* (FGD-3, adolescent boy, Mohammadpur).

Poor quality of service: Most adolescent boys are satisfied with the services of the doctors they visited, but many complained that they had to wait for a long time to get their desired services.

Fear of diagnostic procedures: Respondents from Mohammadpur Geneva Camp reported that many of them feared injection, blood tests, and other diagnostic procedures.

> *"Sometimes we do not visit a doctor because we fear he/she might give us ultrasonogram or blood tests, or push injections"* (FGD-1, adolescent boy, Mohammadpur).

Recommendations on how to overcome the barriers of SRH care-seeking

The adolescent boys suggested different ideas and recommendations to overcome the barriers mentioned above regarding adolescent boys' SRH care-seeking. The recommendations suggested by them to overcome the barriers by the FGD participants were as follows:

- Adolescent boys wanted better healthcare facilities within their community or at a minimum distance to access health services.
- Many of these respondents were not in schools, and they were working for a living. They could not spend much on healthcare. Many of them talked about the high cost of consultation and treatment. They understood that they would get better service if they could consult with a doctor instead of visiting a local drug store, and they were willing to utilize hospital services if they could afford the cost.

  > *"Think about a person who earns only 300 taka per day and has to spend 100 takas for food; he will be able to take treatment if only the cost is lower. But, how will he manage the extra money if the treatment cost is so high!"* (FGD-7, adolescent boy, Saidpur).
- Though many of these boys understood that they must disclose their private matters to get proper SRH care, they were concerned about their privacy, and they felt shy to talk about these issues. They wanted SRH services in a private environment where they would feel comfortable sharing their problems.

> *"Boys and girls of our age feel shy. Whatever the place is, pharmacy or hospital, if we can talk privately, I do not think any of us will hesitate to visit that place"* (FGD-8, adolescent boy, Saidpur).

- Healthcare providers should be welcoming and empathetic to adolescent boys. Unlike other health issues, adolescent boys felt uncomfortable and shy talking about SRH problems. Therefore, they wanted their service providers to be good listeners, polite and respectful.
- Adolescent boys suggested that a healthcare center should have an adequate supply of medicine and sufficient diagnostic facilities. Moreover, ambulance service is needed to facilitate emergency management.
- To enable adolescents to seek SRH care, healthcare facilities should have both male and female doctors so that boys can consult with male doctors and girls can consult with female doctors.
- Most adolescent boys had access to the internet, and some of them consider porn videos as a potential source of sex education. One respondent mentioned that they could collect sexual and reproductive health information from online sources if anybody felt shy. If there is any website about adolescent health, they will be able to access correct information.

> *"This is the modern era. We can find out information from YouTube or other online websites. If we cannot share our problems because of shyness, then we can learn about those things online"* (FGD-4, adolescent boy, Mirpur).

- The study uncovered a need to establish healthcare facilities within or nearby these camps. They suggested that if BRAC can help them with SRH and other health services by setting up affordable health centers, they would be able to take consultations more easily.
- Some adolescent boys suggested BRAC should arrange programs and discussions within their community to educate people on sexual and reproductive health. One respondent opined they needed guidelines about nutritional needs during pubertal development. Another adolescent boy suggested BRAC could help them with getting healthcare from different institutions.
- A school-going teenager from Mirpur Millat Camp gave some suggestions about increasing public awareness. He thought that BRAC could arrange programs to provide SRH care and education by door-to-door visits in their community. He also added that community meetings should be organized for the management of SRH problems. He also suggested that school teachers should be trained on these topics so that teachers could discuss these issues later with their students. Informing adolescent boys about sexual and reproductive health through street theatres, posters, and other media was recommended by him too.

RESUTS: HOUSEHOLD SOLID WASTE MANAGEMENT SYSTEM

In this study, we interviewed nine respondents involved in sanitation and waste management in the study areas. Among the respondents, seven were males, and two were females. The average age of the respondents was 49.11 years (minimum 32 years to maximum 65 years). Two respondents had no formal schooling (though they can sign), three completed grade 5, one passed the SSC examination, two passed the HSC examination, and one completed post-graduation. Among them, four were community leaders, followed by two chairmen of the camp committees, two ward councilors, one camp in charge involved in sanitation and waste management in their respective camps.

The whole household waste management chain can be described in five steps: storage, collection, transport, treatment, and safe uses or disposal. As mentioned earlier, we conducted in-depth interviews with the key persons who have information about the household waste management chain. We also observed the waste management system within the camp to capture the current situation of storage, collection, transport, treatment, and safe end uses or disposal of household solid waste in the study sites (Mirpur, Mohammadpur, and Saidpur).

Step one: Collection and temporary storage at home

Current scenario

The study revealed that people store household solid waste in dustbins or other containers at the household level. By the word ‘dustbin,’ the respondents indicated the dustbin or basket and all other things they use to store after collecting all the solid waste produced in the household before dumping in a particular place. These include bowls, buckets, or polyethylene. In Mirpur and Mohammadpur, these containers were placed both outside and inside the households. In contrast, in Saidpur, in most of the households, there was a bucket/dustbin/plastic bowl placed in front of every household all the time (**Figure 10.1**).

Mohammadpur Mirpur

Figure 10.1: Plastic bowl and bucket to store household waste before dumping it to other places

In Mohammadpur, many people dump the household solid waste directly to the nearest small communal dustbin by themselves. Then cleaners (employed by the camp community) collect the waste from these communal dustbins to the big dustbin (located near the main road). According to one of the respondents from Mohammadpur:

> *"Those who have their house beside the main road keep dustbin at the household level to store solid waste. However, those who live in the middle of the camp (where it is also more crowded) have no place for a dustbin, and they directly dump the waste in a nearby small (communal) dustbin. Moreover, those who live on the second or third floor and have enough place to keep dustbin use dustbin for storing waste and those who had no place, they directly dump in the small (communal) dustbin"* (IDI-2, community leader, male, Mohammadpur.

Few respondents reported that people who, despite maintaining a dustbin at the household level, directly dump the waste in random places (**Figure 10.2**). From the field observation, it was evident that though pacca drain infrastructure was there in the study areas but those were not functional (not running), as those were either blocked collapsed in short intervals. In the rainy season, obstruction of the drainage system deteriorated to the next level and overflew all over the places. According to one of the respondents from Saidpur,

> *"Here in this camp, we have 400 households. SKS, one NGO, distributed 80 containers (dustbin) among this number of households for storing household solid waste before dumping. This number of containers is not enough. Many people throw household solid waste directly into the drain which ultimately blocks the drain and worsens the situation"* (IDI-9, Ward councilor, male, Saidpur).

Figure 10.2:Dumping household solid waste directly to the drain (Saidpur Bihari camp)

The current challenges

The challenges regarding the collection and temporary storage of solid waste at home in these camps are as follows:

- Random throwing of household solid waste: Instead of keeping it in a dustbin, many people directly threw the waste from the households to the nearby open spaces, roads, and drains. Particularly in the rainy season, the situation becomes worse, and the place becomes unhabitable due to the nauseating odor.
- Irregularity in daily waste collection: Sometimes, the waste collector did not come every day. If the waste collector does not come regularly, the bad smell from the waste makes it unbearable to live in the household. A small portion of the household keeps the dustbin inside the household, in which case the situation gets worse.
- Open dustbin within or in front of the households: Almost all the dustbins were open, allowing flies and other insects to spread the germs from the waste. Sometimes dogs, cats, or other animals carry the waste and contaminate the environment.

Suggestion to overcome/address the challenges

The respondents suggested using a dustbin with a cover to make the situation better. They also suggested awareness-raising campaigns on the importance of proper management of household solid waste and on the multi-dimensional (health, environment, etc.) negative consequences/impacts of mismanagement of the waste.

Step two: Containment (collection and temporary storage)

Current scenario

Most of the respondents reported that in their locality, most people discard household solid waste daily. Few respondents added that sometimes the dumping of solid waste depends on the waste produced in a day. The study revealed three ways of removing household solid waste: a) the system to collect waste from household level by an assigned person for that locality (mainly in Mirpur); b) the system to dump the household waste by the member of individual households (mainly in Saidpur); and c) both a and b simultaneously (mainly in Mohammadpur). The first system was the typical scenario in Mirpur and Mohammadpur, though simultaneously, the second system exists too. In Mohammadpur particularly, many people dump the household solid waste directly to the nearest small dustbin and drain by themselves. Then cleaners (employed by the camp community) collect the waste from the small dustbin to the big dustbin (located near the main road) as a final storage space. The cleaners emptied the small dustbin 2-3 days a week. However, in Saidpur, people remove the household waste by themselves primarily to local communal dustbins or designated spots before emptying or transportation for treatment.

Regarding system one, the waste management workers came to the households with a medium-sized drum to collect the solid waste and store them in a small van before emptying the solid waste in the dumping place (**Figure 10.3**). They used the small van as walkways in the camps were narrow and congested. These cleaners or waste collectors collected waste from door to door and were usually recruited from the community. People had to pay for this service every month from 40 taka to 100 taka in Dhaka (Mirpur and Mohammadpur). In Saidpur, they did not have to pay as they did not have this service.

Figure 10.3: Transportation of the household solid waste from the households to a dumping place (Mohammadpur)

The place for dumping household waste differed from camp to camp and in different parts of a camp (**Figure 10.4**). In Mirpur and Mohammadpur, the common designated dumping place was communal dustbins (having a structure like a wall or a container) followed by designated open spots without any boundary or wall. In one of the camps of Saidpur, people started filling up a nearby pond with household solid waste on their own (meaning without seeking permission from the municipality). One respondent added that the local people had an intention to develop/build an *Eidgah* (where Eid prayers are held) after filling up the pond with the waste. Besides, few respondents opined that people did not dump the household waste in a designated dustbin/spot; instead, they threw the waste in nearby drains, streets, or here and there. This practice was more common in Saidpur camps.

> *"Here, people are less educated, and most of the families dump their household waste here and there, in the road or drain. Despite having dustbin, only a few people dump the household waste in the dustbin*" (IDI-6, camp chairman, male, Mirpur).

Mohammadpur

Mirpur

Saidpur

Saidpur

Figure 10.4: The place for dumping household waste in different Bihari camps

The current challenges

The challenges regarding collection and storage (temporary before transportation for treatment) of solid waste in this camp are as follows:

- The system for collection from the household level is not available for all: In Saidpur, this system is absent. This was the scenario for some camps in Mirpur and Mohammadpur too.
- Perceived high cost of the service of collecting waste from household level: According to several respondents, people in Mirpur and Mohammadpur perceived that paying (40-100 taka per month) for collecting household waste was too much for them. Instead, they would remove the waste by themselves from households and save the money for other purposes.
- Distance of the temporary storage spot from households: In Mirpur, the distance of the allocated dustbin for solid waste dumping from the households was long, which sometimes caused people to dump the waste here and there near the households.

- Temporary storage spot (communal dustbin) was not well-contained: Almost all the designated dustbins for household waste storage were open.
- Shortage of human resources: The number of people currently involved with the waste collection from the household was not enough, according to one respondent.

Suggestion to overcome/address the challenges

The respondent provided suggestions for the better management (collection and storage) of solid waste in the study areas.

- There is a need to make the waste collection services available in all camps with a flexible charge
- Construction of well-contained dustbin within the camps considering the distance of the households (fix the number of households per dustbin)
- Increase human resources for better management of the waste

Step three: Emptying and transportation

The current scenario

This section covers the household solid waste management from temporary storage point to being transported for treatment in the treatment place. According to the respondents from all three study sites, it was evident that the respective city corporation/municipality (Mirpur and Mohammadpur: Dhaka North City Corporation and Saidpur: Saidpur Municipality) were responsible for the management of solid waste from the big temporary dustbins to the end of the management chain.

In Dhaka and Mohammadpur, Dhaka North City Corporation (DNCC) authority finally collects the solid waste from different dustbins and temporary dumping spots. They emptied the dustbin with garbage cranes or trash pickers and then transported them. Few respondents reported that DNCC emptied the dustbin daily, and others opined differently.

In Saidpur, open vehicles (usually pick-ups) from the municipality came with several waste management workers or cleaners (employed by the municipality) to empty the big dustbins and collect and transport the solid waste to the final treatment or dumping places. The authority (Saidpur municipality) was supposed to collect waste from the camp every day, but the reality was different. Sometimes they came twice or thrice in a week.

The current challenges

- The vehicles for transporting the waste were open (particularly on Saidpur), which was not environment friendly, and sometimes the vehicle became overloaded with the waste and dropped the waste on the way (though it may be unintentional) to the final dumping place and thus contaminated the road.
- Irregularity in emptying the communal dustbin was another challenge in this step.
- In Saidpur, manual emptying might cause health hazards for the workers if precautions were not taken properly.

Suggestion to overcome the challenges

- The respondents emphasized ensuring regular services (emptying and transportation) and the provision of modern vehicles.
- Awareness of occupational safety among waste workers are essential
- Safety gears (shoe, gloves, masks, etc.) need to be made available for the waste workers by the employer (private company, NGO, DNCC, Saidpur municipality)

Step four - Treatment and disposal/end-use/reuse

The current scenario

In an ideal situation of the waste management service chain, the necessary treatment of the solid waste is mandatory before final disposal. The respondents of the current study provided extremely limited information about the treatment of solid waste before final disposal. Only four (three in Saidpur and one in Mirpur) out of nine respondents were able to relate to the concept when asked about the current practice regarding treatment of waste.

Regarding the final disposal of the solid waste, one respondent from Mohammadpur stated that he only knew that the DNCC authority transported the waste to a Secondary Transfer Station (SSS) at Kalabagan (part of Dhaka city) and after that he had no idea. Respondents from Mirpur opined that DNCC dumped the waste to fill up roadsides, ponds, big holes, and lowlands where there was an upcoming plan to develop something like housing, market, and commercial spaces. There are also some Secondary Transfer Stations (SSS) available in the Mirpur area. In Saidpur, the current practice regarding final dumping of solid waste was to dump in a place called *Bhagar* and fill up the roadsides and other places too (**Figure 10.5**). However, all three respondents from Saidpur were aware of the modern treatment plants and were hoping to have one in Saidpur soon if the land for the plant could be managed by Saidpur municipality. As stated by one respondent:

"All the waste we have now is being dumped in a place called Bhagar. An organization (named) MTSP is requesting Saidpur municipality to allocate a place to build the treatment plant and final a disposal place. If we can manage the land, then the MTSP will sponsor the cost of building such a plant. We are hoping to get it done by 2021-22" (IDI-8, ward councilor, male, Saidpur).

Figure 10.5: Final disposal of household solid waste (roadside fill-up)

The current challenges

- Lack of awareness about the treatment and safe end use or disposal of the solid waste.
- Resource constraints of the city corporation authority (particularly in Saidpur).

Suggestion to overcome/address the challenges

The respondents expressed the importance of proper treatment and safe end-use or disposal of the solid waste, and they were keen to participate in the process in the future.

RESULTS: FECAL SLUDGE MANAGEMENT

There are five components of the sanitation value chain or fecal sludge management (FSM) chain: storage, collection, transport, treatment, and safe end-use or disposal of fecal sludge. According to the United Nations, "The state must ensure without discrimination that everyone has physical and economic access to sanitation, in all spheres of life, which is safe, hygienic, secure, socially and culturally acceptable, provides privacy and ensures dignity." Accordingly, it is necessary to ensure strong links throughout the fecal sludge management (FSM) activity chain as untreated fecal sludge can contaminate the environment and has severe implications for human health.

We conducted in-depth interviews with the persons who manage or oversee the whole FSM system, such as camp in-charge, camp chairman, community leader, and observed the steps of the FSM system within the camps. The following section illustrates the current scenario of storage, collection, transport, treatment, and safe end use or disposal of fecal sludge in the three study areas (Mirpur, Mohammadpur, and Saidpur).

Step one: toilet types

Current scenario

Access type: Regarding access type of toilets, the study population used all three types, i.e., private (not shared), shared, and communal. The relatively well-off people built their private toilets.

> *"I think, those who have enough money, get their separate toilet with separate line linked to main sewerage connection. But those who do not have money, they have to go to communal/public toilets"* (IDI-1, community leader and sanitation entrepreneur, male, Mohammadpur).

Information on sharing of the toilet is essential for the FSM arrangements because accountability for dealing with the full or blocked pits and payment for FSM services may be complex in a 'shared' situation.

Toilet cleaning: In Mohammadpur, community/public toilets were cleaned twice weekly by sweepers paid by the community people. This practice also existed in Mirpur and Saidpur. Most of the respondents reported that they created funds to manage the cost of sweepers by themselves. One respondent said:

"We collect 10 taka from each household monthly, from which the money for the sweepers is paid. Thus, we manage all such tasks by ourselves" (IDI-8, ward councilor, male, Saidpur).

Water connection in toilets: In some community toilets, there was no running water connection, and people must carry water to use the toilets. Moreover, the water source is not very close to the toilets in some cases.

Mohammadpur

Saidpur

Mirpur (inside a community toilet)

Saidpur (toilet not in use)

Figure 11.1: Different types of toilets in the study areas

In Mohammadpur, toilets are allocated separately for men and women in most cases when it comes to community toilets or public toilets. This practice was also observed in the other two study sites.

The current challenges

The challenges relevant to STEP one are:

- People were not careful enough while using the community toilets as those were common property for all.
- Many households shared community toilets, so, none of the households were interested in regular cleaning of the toilet
- The number of people per toilet was too high, which caused difficulties and affects the life of the sanitation establishments.
- As water source, bathroom and toilet were built side by side within a tiny space; many people used these facilities simultaneously different purposes as toilets, source of drinking water, washing clothes, washing cooking utensils, washing foods, bathing, and washing animals. In addition, the nearby drain was open and semi-running or logged. With this situation, ensuring proper sanitation and hygiene for this population is nearly impossible.

c) Suggestion to overcome/address the challenges

- Sense of ownership and subsequent care need to be improved among the people in this community.
- There is a need to establish more toilets with proper waste management infrastructure.
- For cleaning utensils and washing foods, the source of drinking water needs to be separated from a water source for other purposes.

Step two - Containment (collection and temporary storage)

Toilets can be of different types such as 1) “Sewered (off-site centralized or decentralized)”: toilets connected to sewers (not OSS); 2) “On-site storage – emptiable”: OSS toilets (involving pits or tanks) which can be emptied considering the method of storage of fecal sludge. However, they can also be connected to drains through an overflow to avoid the need for emptying. These toilets are emptiable but may or may not be emptied; 3) “On-site storage - single-use / pit sealed”: OSS toilets where pits or tanks are sealed and/or abandoned once full. These toilets are emptiable but never emptied; 4) “On-site non-storage - straight to drain/similar”: OSS toilets which connect to drains or open water bodies (e.g., hanging latrine, or latrine with a pipe connecting the pan directly into a drain). These toilets therefore do not need to be emptites, and 5) Open defecation” (5).

Current scenario

Broadly, the study revealed that in Mohammadpur, most people had sewered toilets connected to the central sewerage system (through Babar Road) of Dhaka city and hence there was no need of emptying. In addition, there were some toilets with a septic tank, i.e., "On-site storage – emptiable" connected to drains through an overflow to avoid the need for emptying.

> *"Faecal waste connected with the drain in here (one of the camps in Mohammadpur). An NGO built a septic tank next to the public toilet two years ago, which is deep and long. The depth of the tank is ten feet and connected to drains through an overflow at eight feet level to avoid the need for emptying. As the connection is as top as 8 feet, the septic tank tends to be near full all the time. This pipe is connected to the drain of Babar Road. The private toilets made by few dwellers are connected to the drain under the street in the area through pipes. So, these drains always overflow. Particularly on Friday or any other off days, when everyone uses the toilet, these wastes from the drain go up and cause a problem for the people. In this circumstance, we call the sweepers; they come and clean the drain"* (IDI-1, community leader and sanitation entrepreneur, male, Mohammadpur).

In Mirpur, most of the toilets were "On-site non-storage - straight to drain/similar": toilets which directly connected into surface drains toward local water bodies or local land. Often these drains become fully blocked by solid waste and then overflowed all over the places. Then community people collect money (50 taka from each household) and hire sweepers to clean the drain and make it functional again. Unlike Mohammadpur and Mirpur, "On-site storage – emptiable": OSS toilets involving pits or tanks which can be emptied was the most common type of toilets in Saidpur.

The current challenges

- The area becomes contaminated with feacal sludge when the waste overflowed from the drain, particularly during the rainy season.
- As cleaning is a shared responsibility, there is a need to raise funds from community people, which causes some delays in the cleaning process.

Suggestion to overcome/address the challenges

- Planned and well-connected fecal sludge management systems need to be developed in these camp areas, which will benefit in many ways.

Step three: Emptying and transportation

Current scenario

Emptying methods: In Mirpur and Mohammadpur, manual emptying was the predominant practice. In Saidpur, all three respondents mentioned that they used mechanical emptying using vacuum tanker/Vaccu-Tag. However, in the camps, some roads were so narrow that Vaccu- Tag ccould not enter into camps. One respondent from Saidpur stated:

> *"Earlier, we cleaned the filled-up tank with the help of sweepers and put the fecal sludge in a deep hole and covered that with enough soil to prevent bad smell. But now, we collect money from the user of toilets and apply for the vacuum tanker (Vaccu-Tag), a tank truck that has a pump and a tank. Using this tanker, we pump the fecal sludge into the vacuum tank and transport sludge to the final destination"* (IDI-7, camp in-charge, female, Saidpur).

During manual emptying, waste was being transported by the sweeper to the dumping places after putting in sacks. However, some private companies and NGOs also operated mechanical Vaccu-Tag in the community for emptying septic tanks.

Emptying frequency: The frequency of emptying the tank or pits depended on the size of tanks/ pits and the number of users per toilet in the study areas. During the rainy season, the frequency of emptying increased as mentioned by the respondents from Mirpur and Saidpur.

Emptying fees: The cost of manual emptying is low compared to mechanical emptying. As stated by different respondents about the cost of emptying:

> *"We have to pay 40 takas per month per household for cleaning once a week or once in 2 weeks"* (IDI-1, community leader, male, Mohammadpur).
>
> *"If it is 15-20 sacks, then you have to pay at least 500 takas.* (IDI-5, community leader, male, Mohammadpur).
>
> *"When the toilet was full of dirt, I brought a vacuum tanker, and it costed me seven thousand takas"* (IDI-7, camp in-charge, female, Saidpur).

The current challenges

- High cost of mechanical emptying services
- There is an associated health risk of manual emptying to the sweepers/ cleaners.
- In the camps, some roads are so narrow that Vaccu-Tag can't enter the camps.

Suggestion to overcome/address the challenges

- There is a need for mechanical emptying facility within low cost in the camp of Mirpur and Saidpur.
- Awareness of occupational safety among the cleaners and sweepers is essential
- Safety gears (shoe, gloves, masks, etc.) needs to be made available for the cleaners and sweepers by the employer (private company, NGO, DNCC, Saidpur municipality)

Step four - Treatment and disposal/end-use/reuse

The current scenario

The present study revealed that with a poor sewage system and no treatment of fecal sludge coming from latrines, most fecal sludge ends up in the open environment untreated - polluting the soil and surrounding waterways. There is no dumping site designated for fecal sludge in any of the three study sites. It is a great environmental concern that collected sludge was not managed in an environmentally safe way in most cases. Although collected sludge often went into the open, most people stated that they were aware of its negative consequences (contaminates water, affects human health and environment in general). We asked the respondents about the treatment of the fecal sludge before final disposal. The respondents from Saidpur had been exposed to such ideas through training and visiting few plants. In Saidpur, one waste treatment plant was being operated by an NGO named SKS, in collaborationn with Saidpur municipality. However, the plant was yet to run at its full capacity. Moreover, the respondents had minimal knowledge about the treatment of the final disposal of fecal sludge. Regarding the final disposal of the fecal sludge, a respondent from Mohammadpur stated that he only knew that all the drain ended up in the large drain in Babar Road. The fecal sludge from the manual emptying of the septic tanks and others finally ended up with the solid waste after becoming dry while keeping in sacks beside the roads or open drains. This was the case for the Mirpur area too.

The current challenges

- No awareness about the treatment and safe end use or disposal of the fecal sludge.
- Resource constraints of the city corporation authority (particularly in Saidpur) to build a treatment plant for fecal sludge treatment.

Suggestion to overcome/address the challenges

The respondents expressed the importance of proper treatment and safe end use or disposal of the fecal sludge, and they were very keen to participate in the future. Advocacy with both Dhaka North City Corporation (DNCC) and Saidpur municipality is required to reduce, recycling and reuse of wastes through operating waste treatment plants.

RECOMMENDATION

Based on the findings, we are providing some general recommendations (applicable for all program components) and specific recommendations below:

General recommendations:

1. The participants have a high level of illiteracy. Therefore, social and behavioral change communication needs to incorporate audio-visual and pictorial options. Moreover, as almost all households have access to mobile phones, interventions using the mHealth platform can be tried.
2. There is a high level of food insecurity, and households used unsustainable means of coping with food insecurity. Therefore, the health, nutrition, and WASH programmes of BRAC UDP should aim to reduce household expenditure for health purposes so that the households can spend money for non-health purposes, e.g., food and education.

Maternal health and Family Planning

1. A significant proportion of women do not use sanitary pads during menstruation. The majority of women still use short-acting family planning methods. The BRAC UDP program can emphasize the use of long-acting family planning methods and the promotion of low-cost sanitary pads. Since local pharmacy is the primary source of FP methods, BRAC UDP can also provide FP methods at a low cost.
2. BRAC program needs to implement activities to increase the proportion of women receiving at least 4 ANC during the pregnancy period, especially in the Saidpur area. The cost of ANC is high, and therefore, ANC services should be provided at a low cost. Moreover, a comprehensive social and behavior change communication strategy for MNCH issues, including care during pregnancy and childbirth, birth preparedness, newborn and child care, postpartum care, is needed. Since husbands are involved with the MNCH decision-making, SBCC should also involve husbands. Also, there are areas of quality improvement for ANC, childbirth care, and PNC. In Saidpur, TT coverage needs an improvement.
3. This study identified facilities in which most of the childbirths are occurring. BRAC program should establish referral linkage and ensure quality improvement in these facilities. As the prevalence of pregnancy, childbirth, and postpartum complications are high, BRAC UDP should also provide referral support.
4. There is a very high proportion of C-sections in the study areas. BRAC UDP program should take appropriate measures to reduce C-sections. The average cost of childbirth is also high due to C-sections, and therefore, BRAC UDP should also provide childbirth care at a low cost.

Newborn and child health

1. Though the breastfeeding rate is high, a significant proportion of children were given prelacteals, and there was a delay in introducing weaning foods. Therefore, the SBCC of BRAC UDP programme should highlight infant and young child feeding, care-seeking for newborns, and childhood illnesses and complications. In addition, there should be options

for the care of low-birth-weight and premature babies. One of the evidence-based interventions that can be promoted is Kangaroo Mother Care.
2. Immunization coverage should be improved in Mohammadpur and Mirpur. There is a need for awareness-raising on how to improve the family environment for optimal child development.
3. BRAC health program should have options for the treatment of common newborn and child health problems at a low cost. In addition, an effective referral system should be set up for neonatal and child health complications.

Communicable and non-communicable diseases

1. BRAC UDP programme should integrate services for both communicable and non-communicable diseases with the MNCH services. The prevalence of common NCDs, eye health problems, and the risk factors of NCDs is very high in all the study areas, and there should be preventive, clinical, and diagnostic services for everyone in the community.
2. Spraying of mosquitocide by the municipal or city corporation is irregular. However, BRAC can be in touch with the municipal or city corporation to ensure regular spray of mosquitocide.
3. Given the rise of COVID-19 and other infectious diseases, awareness-raising campaigns for COVID-19 and prevention of other communicable diseases can be done periodically, e.g., quarterly. A similar SBCC campaign should be implemented for NCDs and their risk factors.
4. Early identification of NCDs and mental health disorders should be made using population screening. Services for common mental health problems should be integrated to the existing services of the primary health care facilities.

Sexual and reproductive health of adolescents

1. Given the lack of services for adolescent health conditions, adolescent health clinics for both girls and boys should be established in the BRAC health centers. There can be at least one day in the week allocated for the adolescents. Since privacy and gender of the health care providers are important concerns, there should be female health care providers for adolescent girls and male health care providers for adolescent boys.
2. Given the drug and substance abuse problems and internet addiction issues among adolescent boys, there should be special support services for the boys to help them with these problems. For both girls and boys, awareness-raising and counseling are needed to minimize misconceptions about sexual and reproductive health issues.

WASH

1. The WASH facilities need to be improved though there are many challenges. The BRAC programme needs to find innovative ways to improve WASH infrastructures, e.g., water supply, toilet facilities, and waste disposal facilities, despite the existing challenges, e.g., lack of space. For example, there is no running water supply in many toilets, and the toilets are not cleaned. Even the qulaity of water in many camps are not safe. Community people needs to wait in queue for using water and sanitation facilities. So, BRAC UDP should focus on creating access to improved water and sanitation facilities for the community people with special attention to female and disable people.

2. Regular cleaning of the drains to avoid waterlogging is needed. Moreover, there is a need for improving the whole waste disposal system in coordination with city authorities and save the community people and the persons involved with waste disposal from health hazards.
3. BRAC should implement strategies to improve the current system of solid waste and fecal sludge management. BRAC can also work with the DNCC and Saidpur Municipality to improve the system.
4. Baseline survey couldn't cover educational institues because schools in the project areas were closed amid of COVID-19 pandemic during the study period. However, BRAC should also work in schools for providing separate and funactional WASH facilities to the girls and boys students.
5. Handwashing practices in critical periods (before meals, after meals, before feeding the children, after disposal of feces of the children) need further improvement through SBCC, demonstration of hand washing, and promotion of low-cost methods and devices for hand washing with especial attention to COVID-19 pandemic.
6. SBCC is also required to improve awareness on good practices of waste and fecal sludge management steps and prevention of environmental and health hazards.

CONCLUSION

This baseline assessment reported the current situation of socio-economic, MNCH, communicable diseases, NCDs, sexual and reproductive health of adolescents, and WASH indicators in selected urban slums of Mohammadpur, Mirpur, and Saidpur. Several issues and areas of improvement have been identified and highlighted. We believe, these findings will be helpful for the BRAC UDP to design and implement the health, nutrition, and WASH programs in the slums of Mohammadpur, Mirpur, and Saidpur. At the end of the program, the changes and achievements of the program will be measured by comparing this baseline status of the indicators with the end-line status of the same indicators.

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ANNEX

List of most common, common, and less common sexual and reproductive health (SRH) problems/issues according to the respondents in three study sites

Table (Annex) 1: List of sexual and reproductive health problems/issues mentioned by adolescent girls in Mohammadpur

Most common SRH problem	Common SRH Problem	Less common SRH problem
1. Early Pregnancy and childbirth (2)* 2. Malnutrition (1) 3. Child marriage (1) 4. Unwanted pregnancy (2) 5. Unaware regarding ANC (1) 6. Menstrual management (1) 7. Forceful marriage (1) 8. Less knowledge regarding family planning method (1) 9. Belief regarding family planning (Don't take any family planning commodities before the birth of the 1st child) (1) 10. Sexual violence (1)	1. Belief regarding family planning (Don't take any family planning commodity before the birth of the 1st child) (1) 2. Menstrual management (1) 3. Sexual violence (3) 4. Depression (1) 5. Child marriage (1) 6. Early pregnancy and childbirth (1) 7. Unwanted pregnancy (1) 8. Lack of knowledge on family planning (1)	1. Sexual violence (1) 2. Depression (1) 3.Post-partum haemorrhage (3) 4. Inefficiency in the discussion of SRH problem (2) 5. Forceful marriage (1) 6. Lack of awareness about ANC (1)

*(The numbers in bracket represent the number of FGDs participants mentioned the SRH issues in the respective group)

Table (Annex) 2: List of sexual and reproductive health problems/issues mentioned by adolescent girls in Mirpur

Most common SRH problem	Common SRH Problem	Less common SRH problem
1. Early pregnancy and childbirth (2)* 2. Child marriage (2) 3. Menstrual management (1) 4. Forceful marriage (1) 5. Lack of knowledge regarding family planning method (1) 6. Belief regarding family planning (Don't take any family planning commodities before the birth of 1st child) (1) 7. Menstrual management (1)	1. Sexual abuse (2) 2. Depression (2) 3. Lack of awareness about ANC (1) 4. Unwanted pregnancy (2) 5. Early pregnancy and childbirth (1) 6. Malnutrition (1)	1. Forceful marriage (1) 2. Post-partum haemorrhage (3) 3. Sexual abuse (3) 4. Inability of discuss SRH problem (1)

*(The numbers in bracket represent the number of FGDs participants mentioned the SRH issues in the respective group)

Table (Annex) 1: List of sexual and reproductive health problems/issues of adolescent girls in Saidpur

Most common SRH problem	Common SRH Problem	Less common SRH problem
1. Weakness during menstruation (2) 2. Lack of concentration during menstruation (3) 3. Restriction to go outside during menstruation (1) 3. Restriction to handling pickle during menstruation (1) 4. Restriction to eating sour food during menstruation (1) 5. White discharge (3) 6. No knowledge regarding family planning (1) 7. No knowledge regarding termination of pregnancy (1) 8. No knowledge on menstruation before it occurs (2) 9. Use of cloth during menstruation (1) 10. Unable to buy sanitary napkin because of lack of money (1) 11. Body pain (hand, leg, waist) (1) 12. Don't feel good during menstruation (1)	1. Use cloth during menstruation (1) 2. Unable to buy sanitary napkin due to lack of money (1) 3. Physical abuse (2) 4. Irregular menstruation (1) 5. Restriction to eating sour food during menstruation 6. White discharge (1) 7. Genital irritation during menstruation because of using cloth (2) 8. Restriction to handling pickle during menstruation (1) 9. Poor knowledge on family planning (1) 10. Unwanted pregnancy (1) 11. Unwanted termination of pregnancy (1)	1. Knowledge regarding menstruation before it occurs (1) 2.Irregular menstruation (2) 3. Pre-marital pregnancy (3) 4. Treatment of white discharge (1) 5. Health care seeking for SRH problem (1) 6. Knowledge on family planning (1) 7. Knowledge on termination of pregnancy (1) 8. Health care seeking (1) 9. Restriction on movement during menstruation (1) 10. Physical abuse (1) 11. Blister in the genital area (1)

*(The numbers in bracket represent the number of FGDs participants mentioned the SRH issues in the respective group)

List of **most common, common, and less common** sexual and reproductive health (SRH) problems/issues according to the adolescent boys across the study sites

Table (Annex) 2: List of sexual and reproductive health problems/issues of adolescent boys in Mohammadpur

Most common SRH problems	Common SRH Problems	Less common SRH problems
Masturbation (3)*	Snatching (3)	Weakness (1)
Eve-teasing (3)	Drug business (3)	Teen-gang violence (1)
Anxiety disorder (3)	Wet dream (2)	Sleep disturbances (1)
Drug addiction (2)	Sleep disturbances (2)	Eating Disorder (1)
Interest in love Aafairs (1)	Eating disorder (2)	
Wet dream (1)	Homosexuality/Gay (1)	
Watching porn videos (1)	Drug addiction (1)	
Getting thin (1)	Fights (1)	
Abdominal Pain (1)	Watching porn videos (1)	
	Teen-gang violence (1)	

*(The numbers in bracket represent the number of FGDs participants mentioned the SRH issues in the respective group)

Table (Annex) 3: List of sexual and reproductive health problems/issues of adolescent boys in Mirpur

Most common SRH problems	Common SRH problems	Less common SRH problems
Eve-teasing (3)*	Teen-gang violence (1)	Sleep disturbances (2)
Anxiety disorder (3)	Eating disorder (3)	Weakness (1)
Drug addiction (2)	Snatching (3)	
Masturbation (2)	Drug business (3)	
Watching porn videos (2)	Masturbation (1)	
Wet dream (1)	Sleep disturbances (1)	
Getting thin (1)	Wet dream (2)	
Interest in Love Affairs (1)	Fights (2)	
	Drug addiction (1)	
	Abdominal pain (1)	

*(The numbers in bracket represent the number of FGDs participants mentioned the SRH issues in the respective group)

Table (Annex) 4: List of sexual and reproductive health problems/issues of adolescent boys in Saidpur

Most common SRH problems	**Common SRH Problems**	**Less common SRH problems**
Anxiety disorders (3)*	Problems of genital development (3)	Adolescent fatherhood (3)
Drug addiction (3)	Precautious puberty (2)	Sexually transmitted diseases (3)
Family and peer conflict (3)	Obesity (2)	Delayed Puberty (1)
Eating disorders (3)	Lack of adequate knowledge on SRH (2)	Lack of adequate knowledge on SRH (1)
Unintentional injuries (3)	Wet Dream (1)	
Wet dream (2)	Depressive disorders (2)	
High Libido (1)	Delayed Puberty (2)	
Obesity (1)	Anxiety disorders (1)	
Depressive disorders (1)		

*(The numbers in bracket represent the number of FGDs participants mentioned the SRH issues in the respective group)

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