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**A New Approach to Reducing Poverty and  
Vulnerability: Evidence from BRAC's Integrated  
Development Programme**

Jinnat Ara, Rehnuma Rahman, Syeda Sitwat Shahed  
Sibbir Ahmad, Narayan C Das

BRAC Research and Evaluation Division

# A New Approach to Reducing Poverty and Vulnerability: Evidence from BRAC's Integrated Development Programme

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A new approach to reducing poverty and vulnerability: Evidence from BRAC's IDP

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A new approach to reducing poverty and vulnerability: Evidence from BRAC's IDP

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## EXECUTIVE SUMMARY

Since independence, the growth of Bangladesh economy has been dominantly rural oriented where agricultural and infrastructural accomplishment have been contributing a major section. Additionally, slowed population growth reduced dependency burden and increased resource available for the rest of the family members, leading to improvement in quality of life. Despite such achievement, the economic development has not been uniform all across Bangladesh. Among 491 *upazilas* in Bangladesh, 50 have been identified to be lagging behind in terms of economic and social development (UNICEF 2010).

To address the inequality of development, BRAC started a pilot programme titled Integrated Development Programme (IDP) in the depressed basins of Bangladesh. The first phase of the IDP was initiated in Derai and Baniachong *upazilas* of Sunamganj and Habiganj districts respectively in 2012 and 2013. The IDP is comprised of ten BRAC programmes. They are (i) Health, Nutrition and Population Programme; (ii) Education Programme; (iii) Community Empowerment Programme; (iv) Human Rights and Legal Aid Services Programme; (v) Gender, Justice and Diversity Programme; (vi) Water, Sanitation and Hygiene (WASH) Programme; (vii) Targeting the Ultra Poor Programme; (viii) Microfinance Programme; (ix) Adaptive Agriculture, Fisheries, Livestock and Poultry Programme; and (x) Safe Migration Programme.

The aim of the pilot programme was two-fold: on one hand it aimed to deliver services in a more integrated fashion in the remote *haor* basin; and on the other hand it aimed to address the sustainability issue of large scale micro level interventions by replicating the integrated service delivery approach to other parts of the country. The uniqueness of the IDP is that under this programme, all services are managed and delivered by one single Programme Organiser (PO) through a common platform known as Village Development Organisation (VDO).

This paper provides an impact assessment of the IDP to understand the extent to which it has been successful in improving the lives of *haor* dwellers. Given the extensiveness of the intervention outreach we have specified the outcome indicators down to the level of asset holding, employment and income, food security and nutritional status, health and hygiene, education, crisis and vulnerability and women empowerment.

This study is based on the data from census conducted in 2012-2013 prior to initiation of the IDP, and follow-up survey conducted in January-February, 2016. Census information is available for intervention areas only while the household survey conducted after the intervention covers both intervention and non-intervention areas. Programme impacts were estimated by comparing outcomes at follow-up between the households from intervention and non-intervention areas.

Results show that the intervention increased self-employment noticeably among working-age groups while decreasing casual wage employment to some extent. These results are perhaps derived by asset transfers and access to BRAC loans provided through the IDP because, the IDP has increased the holdings of productive assets such as goat/sheep. Since the IDP transferred productive assets to the selected ultra poor households, the increase in productive asset is expected. The agricultural practice has also been positively influenced by the intervention. Overall, we find that, the area under cultivation and total production have increased substantially in intervention areas compared to non-intervention ones. Furthermore, the IDP has been successful in improving homestead vegetation as well.

Results show that the intervention increased the amount of savings by about 186% and outstanding loans by 19%, and decreased loans taken from moneylenders by about 26%. An average household from intervention areas has savings about BDT 5,650 whereas, in comparison areas this amount is around BDT 3,044. All these positive changes perhaps contributed to higher income. Specifically, impact results show that the intervention increased per capita income at the community level by about 8.7%.

Analysing self-perceived food security, we find that the IDP decreased the proportion of households reporting moderate food insecurity by about 19 percentage points (36%). With regard to the amount of food consumptions, results indicate that per capita consumption of meat, fish, egg etc. each has increased due to the intervention. The magnitude of the effect is large. For example, meat consumption increased by 90%, fish 32% and egg 44%.

Overall, support received under the IDP has been successful in reducing income poverty to a substantial extent. Moreover, the higher income is frequently observed to be translated into higher purchasing power, mostly for food/perishables. We find that, in tandem to per capita income improvement, per capita daily food expenditure has also augmented.

The intervention increased sanitation and hygiene practices remarkably. Specifically, the use of sanitary latrine and sandal while going for toilet has increased by 77% and 4% respectively. Nevertheless, results indicate that the effect on sanitation practice is larger for more depressed basins, perhaps because the practice was worse in the depressed basin at baseline. We speculate that these changes will affect nutritional outcomes in the long-run.

With regard to the nutritional status of less than five years old children, we find that, the nutritional status of under five children in *haor* is worse than that of other parts of Bangladesh. The IDP has not been able to address this concern for boys to a noticeable extent. However, for girls, undernourishment has been significantly reduced.

The IDP has improved healthcare among participants. The positive impact is reflected in the practice of seeking health service before, during and after child birth. We find that, the IDP has increased antenatal care to a large extent which contributed to decreasing pregnancy related complications and thus improving child health. The intervention has also increased the number of live births as well as knowledge and practice of breastfeeding. We do not find any noticeable difference between treatment and comparison areas in terms of contraceptive use. Currently, about 44% of eligible couples from both the treatment and comparison areas are using contraceptives.

The programme has been found to have little effect on enrollment for boys aged 6 to 10 years, however, has had significant influence over increasing enrollment of boys age between 8-10 years. Currently the primary school enrollment rate for boys is about 86 per cent. The intervention had limited attribution toward increasing girls' school enrollment, which remains similar across treatment and comparison regions (around 89%). Quality of education measured by regularity in school attendance has improved to some extent.

Evidence further suggests that, the IDP was able to raise awareness among people in regard to legal age for marriage, rules of divorce, dowry etc. Though people are still not knowledgeable about the HRLS programme, the dominance of village *salish* has been significantly reduced. Similarly, the incidence of facing sexual harassment also went down. The programme has thrived in establishing a better communal network through DSG (Development Support Group). As already mentioned, the IDP succeeded in raising awareness about the legal age of marriage for girls which is crucial for combating early marriage. Relative to the non-intervention areas, a higher proportion of the women from intervention areas reported that they are aware about the eligible age of marriage for girls. Additionally, the intervention has succeeded in raising consciousness about the rules of divorce, the pros and cons of exchanging dowry. Similarly, the intervention has increased womens' knowledge about voting age, various facilities of the intervention available at BRAC office etc. We also find positive and significant impact on women empowerment as compared to non-intervention areas, the women from intervention areas have more influence over making important household decisions such as purchasing land and clothing, educational and health expenditures.

Findings show that, overall, the programme has made notable success in transforming quality of *haor* lives. There has been visible shift towards self-employment from wage employment in addition to greater occupational divergence to homestead vegetation. Poverty situation seems to have improved through accumulation of asset, higher income and greater purchasing capability. Quality of life in *haor* has been observed

to have improved through greater access to improved sanitation facilities together with enhanced knowledge. The development in economic aspects has successfully transitioned to social dimensions such as greater cohesion, empowerment of women along with higher awareness. One of the most discerning impacts of the IDP has been in the sector of financial market participation. IDP support successfully reduced dependency on over-charging moneylenders and raised reliance on other sources such as micro finance.

On the other side, some components of the IDP did not share the same success story. For example, the effect on education is smaller in magnitude possibly because educational support was not significantly different between treated and non-treated areas. Secondly, IDP support was not sufficient to create any substantial change over child and maternal health as well as family planning.

By and large, the IDP as an approach to address the perilous parts in depressed basins seems to have produced positive outcomes. Whether such an approach can be applied to other poverty pockets of Bangladesh can be an explorative question for further discussion.

## CHAPTER ONE

# INTRODUCTION

### 1.1 BACKGROUND OF THE STUDY

In recent decade, Bangladesh's rural economy has advanced remarkably well in terms of agricultural and infrastructural development that fueled the countries rural non-farm economy (Hossain and Bayes 2009). Substantial reduction in population fertility (BDHS 2016) has contributed to the reduction of dependents per working member of families, an increase in school participation of children and reduction in number of child and infant death. All of these have contributed to increased income and poverty reduction (BBS 2011). This progress, however, has not been evenly distributed across the country; pervasive poverty still persists, especially in various remote and inaccessible areas of the country. A Multiple Indicator Cluster Survey (MICS) conducted in 2009 by the UNICEF identified sixty out of nearly 491 *upazilas* of the country as lagging far behind than the others with regard to improvement in health and education indicators (UNICEF 2010). Bangladesh Bureau of Statistics, the World Bank and the World Food Programme also portray the same perilous picture<sup>1</sup>.

Evidence shows that most of these poverty pockets belong to the ecologically unfavorable environments such as the flood prone areas adjacent to the Jamuna, Teesta and Padma rivers in the North-west and the depressed basins/*haor* areas in Sunamgonj and Habiganj districts of the Sylhet region, Kishoregonj and Netrokona districts of the Mymensingh region, the Chalan Beel areas of Sirajganj, Natore and Pabna districts, the sloping uplands in the Chittagong Hill Tracts, and the salinity affected regions in the south-west coast in the Barisal and Khulna regions. Government investments in roads, electricity and other physical infrastructure have been inadequate in these remote locations. Furthermore, public services with regard to the agricultural extension, healthcare, education and sanitation are alleged to hardly reach these areas (Nath 2013).

The depressed basins (henceforth called by the local name *haor*), are bowl-shaped low lying river basin that remains waterlogged for almost half of the year. These basins are characterised with abject proverty and adverse environmental conditions.

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<sup>1</sup>World Bank, BBS and WFP (2015). <http://www.bbs.gov.bd/webtestapplication/userfiles/image/LatestReports/Updating%20Poverty%20Maps%20of%20Bangladesh.pdf>

These *haor* regions are prone to flash flood, seasonal flood and river erosion, where people mainly practice mono cropping system. Agricultural activities are conducted only in dry/Boro season where paddy is the dominant crop and most of the land primarily remain fallow, waterlogged for rest of the year. Further, most of the water bodies of *haor* areas are leased out to influential people who make it impossible for poor households to have proper access to the water resources. On the other hand, due to the poor communication system population living in deep *haor* areas are also deprived of proper transportation, health and educational facilities. Thus, in the absence of proper economic opportunities and infrastructure, people living in the *haor* areas are mostly driven to the den of poverty.

Recognising the vulnerability of the people living in the poverty pocket of *haor*, BRAC decided to implement a pilot project in 2013 called “Integrated Development Programme (IDP)”. The programme was designed to improve the livelihood of the people living in the depressed basins of various regions of Bangladesh.

## 1.2 OVERVIEW OF INTEGRATED DEVELOPMENT PROGRAMME

BRAC, the largest non-governmental development organisation in the world, aims to alleviate poverty through organizing the vulnerable people using a community-based development approach. It mobilises people through Village Organisations (VOs), which act as a platform for delivering various essential services. BRAC's multifaceted development interventions include provision of micro finance services, transfer of assets to the ultra poor, provision of second chance education to children who are bypassed by the formal education system, extension of basic healthcare through community-based health volunteers, organisation of people in informal associations for community empowerment and strengthening the local government, and provision of human rights and legal aid services. BRAC strives to create social capital, and help realise the potential of people and communities in situations of acute poverty, illiteracy, ill-health and social discrimination (BRAC 2014). The development interventions usually provided by BRAC are implemented on a piecemeal basis all over Bangladesh which complements development efforts and policies pursued by the government, the private sector, and other civil society organisations working in the same locality. A critique of this disjointed intervention approach is that limited resources are spread thinly over for a few households in a locality with limited visible impact on the socioeconomic development of an area, making it hard to assess the specific impact of BRAC interventions.

In view of the above mentioned features, in 2013, BRAC articulated a pilot project titled Integrated Development Programme (IDP) under which BRAC purposefully targeted socioeconomically depressed regions, after identifying the need for services essential for improving the livelihoods of the people. In this way, BRAC concentrated on a few geographical areas with intensive coverage of the activities required for socioeconomic upliftment. Needless to mention that it is a ‘unique’ approach that could be replicated countrywide given the positive outcomes. The first phase of the

IDP was initiated in Baniachong and Derai *Upazilas* of Habiganj and Sunamganj districts, respectively. The aim of the pilot programme was to deliver services in a more integrated manner in the remote, hard to reach, and underserved villages/*hatis*<sup>2</sup> of the *haor* basin. The uniqueness of the IDP compared to individual programme based delivery is that under the IDP, all services are managed and delivered by one single Programme Organiser (PO) through a common platform village development organisation (VDO). After monitoring the initial success of the IDP, this cohesive approach was implemented in two other *upazilas* (Itna of Kishoreganj district and Khaliajuri of Netrakona district) in 2015.

The IDP is comprised of ten key programmes of BRAC's, namely:

1. Health, Nutrition and Population Programme
2. BRAC Education Programme
3. Water Sanitation and Hygiene (WASH) Programme
4. Community Empowerment Programme
5. Adaptive Agriculture, Fisheries, Livestock and Poultry Programme
6. Gender, Justice and Diversity Programme
7. Targeting the Ultra Poor Programme
8. Human Rights and Legal Aid Services Programme
9. Safe Migration Programme
10. Microfinance Programme

The objective and activity plan for each of the ten programmes are described as follow:

### 1. Health, Nutrition and Population Programme

Given the geographical remoteness, the status of health facilities and services in *haor* areas is appallingly poor. Under the integrated approach, BRAC provided community based healthcare services as part of its core health intervention model along with primary healthcare. It adopted an appropriate approach of delivering services and provision of active referral system suitable to speed up referral process. Within the arena of holistic development approach of the IDP, several interventions were applied to reduce health vulnerabilities specifically the risk of maternal and child deaths and morbidities. To provide services in the community, BRAC recruited and trained frontline community health worker (CHW) cadres, the *Shasthya Shebika* (SS) and the *Shasthya Kormi* (SK) and also developed Community Skilled Birth Attendants (CSBA) from high performing SKs to offer skilled delivery care at home. A new cadre, Newborn Health Worker (NHW), was appointed to assist mothers during delivery in absence of CSBA and provide newborn care. A group of paramedics conducted Satellite Clinics and provided primary healthcare for the mass population and also supervised experimental floating/static delivery centres, and activities and performance of CSBAs and NHWs.

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<sup>2</sup> An elevated earthen mound in *haor* which accommodates a number of dwelling units.

The assortment of healthcare brought under the IDP are reproductive healthcare, maternal, child nutrition and general nutrition promotion, safe delivery system, all care related to pregnancy and new born as well as tuberculosis control.

## **2. BRAC Education Programme**

In order to extend quality education facilities to under privileged children of hard to reach *haor* areas, BRAC has taken its education model in Derai and Baniachong. Under this component, children are offered pre-primary, primary, secondary, adolescent and continuing education. In pre-primary level, students are chosen on the basis of poverty criteria where at least 60% are girls. Teachers of pre-primary schools are locally recruited and trained by BRAC. After getting one year of pre-primary courses based on BRAC developed text books in Bangla, Mathematics and Science, all the graduates are enrolled in the nearest Government Primary School (GPS) or Registered Non-government Primary School (RNGPS).

With an aim to include children within education system who are either dropouts or never enrolled and remain out of reach from government primary school, BRAC considered children from 8-10 years for primary schooling and 11-14 for secondary education. In addition to mainstream educational intervention, BRAC also developed innovative delivery system of boat schools and provided technical support to other NGOs to improve their educational outreach within community.

At the secondary level, BRAC mainly works with mainstream government schools where support is given to ensure teaching-learning environment for BRAC-supported government schools, enhancing the teaching skills of teachers in core subject areas (English, Mathematics, Science and Bangla), introducing technology-based education, improving the school management capacity of head teachers and school management committee, facilitating the preparation and implementation of School Action Plans (SAP), and developing a pool of mentors capable of providing academic and social assistance to their weaker peers, if needed. Furthermore, the intervention also includes learning with digital media, the volunteer tutor (*Chhatra bandhu*) programme to support poor students of grades VI to VIII, and *Medhabikash Uddyog* (Promoting Talent) programme to provide financial support to poor meritorious students at the post-secondary level.

## **3. Water supply, Sanitation and Hygiene Promotion Programme**

With an aim to improve sanitation and hygiene behaviour and practices, and access to safe drinking water as a preventive measure to reduce communicable diseases, BRAC operated its Water, Sanitation and Hygiene (WASH) programme in *haor* region. This programme is involved in building community institutions, capacity of community/social leaders, and training of religious leaders, teachers and student brigade, collaborating with different stakeholders as well as advocacy of government bodies. In adherence to National Sanitation Strategy, BRAC established latrines to be shared by multiple households as well.

#### 4. Community Empowerment Programme

The goal of this intervention is to empower the poor, particularly women, by increasing their human, social and political capital so that they are aware of and are able to exercise their rights, can claim their entitlements, resist exploitation and play a more active role in public life. As part of the support under this component, several activities were implemented which include community institution building namely *Polli Shomaj* and Union *Shomaj*, networking and sharing at national level. Furthermore, to raise awareness and ensure greater accessibility of information Community Empowerment Programme (CEP) also arranged drama shows under popular theater. Additionally, CEP addressed the practice of violence against women by establishing survivor support services as well as organised rehabilitation and social reintegration.

#### 5. Adaptive Agriculture, Fisheries, Livestock and Poultry Programme

In rural Bangladesh, agriculture is the predominant source of occupation where *haor* is no exception. Poor and marginal farmers are affected most as their livelihoods are primarily dependent on agriculture. Agriculture in *haor* basin is characterised by one single crop, Boro rice, mainly cultivated after flood recedes.

To improve agricultural production, the IDP has taken up several initiatives which include homestead vegetable cultivation, crop cultivation, livestock and poultry raising, and fish culture. For homestead vegetable cultivation, women were selected through Participatory Rural Appraisal (PRA) technique, and those owning at least one decimal of land were eligible for support. For crop cultivation, beneficiaries were selected through the PRA under specific criteria like, men and women who have interest in taking training and have maximum of 30 decimals of land were eligible for support. Selected beneficiaries were provided with training on high-yielding-variety (HYV) rice cultivation and supplied with seeds.

Additionally, farmers having maximum two acres of lands were eligible for getting agricultural credit. Credit support were also extended for livestock and poultry rearing, cage cultivation and fisheries. Loan was disbursed under the regular microcredit system of BRAC. Those receiving credit were regular member of the VOs and conform to financial norms and discipline. Furthermore, local interested retailer/extension workers were trained and tagged with local dealers to enhance their income generating scope. They were engaged in livestock and poultry farming as well as open water fish culture and cage culture.

#### 6. Gender, Justice and Diversity Programme

The project aims to reduce the consequences of gender discrimination by integrating gender with development practices. The objective of this component is to strengthen BRAC staffs' capacity on gender equality and empowerment, to reduce the consequences of gender discrimination by sensitising the stakeholders as well as to

increase awareness level within communities for creating gender friendly environment through promotional activities.

## **7. Targeting the Ultra Poor (TUP) Programme**

The TUP programme was developed to respond to the need where conventional poverty reduction strategy had not reached, especially to help the ultra poor to build their livelihoods and develop their human capabilities. Core strategies include a specially designed package of economic, human capital building, healthcare interventions and engaging with the community through 'Special Investment', 'Enterprise Development', 'Essential Health Care' and community mobilisation works. Under the IDP framework, BRAC implemented two approaches: Special Investment Programme (SIP) for the Specially Targeted Ultra Poor (STUP) and Grant Plus Credit Support (GPCS) for the Other Targeted Ultra Poor (OTUP).

The TUP programme provided a package of supports to the selected STUP (includes enterprise development training, asset transfer as grant worth BDT 12,000 on average), subsistence allowance of BDT 30 per day with support duration tailored to reflect personal and enterprise characteristics, customised healthcare with a provision of health subsidy of BDT 500 per beneficiary, community mobilisation works etc. The OTUP package includes enterprise development and life skill training, soft loan, subsistence allowance of BDT 30 per day with duration tailored to reflect personal and enterprise characteristics, input supplies to support the enterprise development, tailor made healthcare services with a provision of health subsidy and community mobilisation works.

## **8. Human Rights and Legal Aid Services Programme**

In Bangladesh, the concept of human rights carry little meaning to the poor and extreme poor people who are subjected to economic exploitation and social exclusion, whose voices are seldom heard, whose rights are constantly violated and whose entitlements are cast aside or ignored. With this at the backdrop, BRAC started its Human Rights and Legal Aid Services (HRLS) programme to stand beside and defend the human rights of these poor and marginalised people through legal education, legal aid, and supportive services to realise legal empowerment. The programme activities of HRLS include: (i) staff training and capacity building, (ii) legal aid service provision via Legal Aid Clinics, (iii) Alternative Dispute Resolution (ADR) mechanism, (IV) rescue operational support, (v) psycho-socio counseling, and (vi) legal referrals.

## **9. Safe Migration Programme**

Although remittance is the major source of foreign exchange earnings, the human rights of the migrants/their families are not adequately addressed by the stakeholders both at home and abroad. BRAC's Safe Migration Programme (SMP) offers opportunities to the unemployed youths to migrate to other countries for better and more rewarding livelihoods and contribute in sustained national development through

foreign remittance. SMP aims to improve the knowledge level of migrants and their families about safe migration process and ensure access to safe migration information for the potential migrant workers. Furthermore, pressure groups at community level are also developed under this programme through communal interaction and local level advocacy with the stakeholders.

## 10. Microfinance Programme

BRAC introduced microfinance in its newly conceived Integrated Development Programme to alleviate poverty, under this programme BRAC offers an assortment of savings and credit products to the target beneficiaries. Among the savings products there are general savings, monthly deposit scheme, fixed deposit scheme, double deposit scheme and monthly profit deposit scheme. On the other hand, the credit products are microloans (Dabi): this loan ranges between BTD 8,000-75,000, is given exclusively to individual women who are members of Village Organisations (VO) and collected back through weekly/monthly repayment. These loans are generally used for poultry, livestock, fruit and vegetable cultivation, handicrafts or rural trade. Microenterprise loans (Progoti) ranges between BDT 75,000-600,000, are given to both female and male entrepreneurs to support and help expand existing small enterprises which are too small to qualify for credit from mainstream banks. Borrowers generally use these loans to finance shops and small-scale manufacturing activities. Additionally, there is also, specialised microloan scheme where as part of empowerment of adolescent girls microloans are given to financially help them continue their education, accumulate savings and receive livelihood training to start smaller home based enterprises. Microfinance also has the provision for insurance for death/casualty.

## 1.3 RESERCH OBJECTIVE

The objective of this study is to assess the impacts of the IDP on the livelihoods of *haor* dwellers. As the programme delivers supports related to entrepreneurship development, food security, health, social development, education, women empowerment etc, we expect that the programme would affect the following outcomes, among others:

- ▶ Employment and income
- ▶ Asset accumulation (productive assets including financial assets)
- ▶ Household welfare (consumption)
- ▶ Education (enrollment rate of children)
- ▶ Nutritional status of children and women
- ▶ Women empowerment
- ▶ Health seeking behaviour
- ▶ Sanitation and hygiene practices and
- ▶ Social inclusion

A large number of literature evaluates development programmes and documents positive effects on the livelihoods of the participants. For example, Bandiera *et al.* (2016); Krishna *et al.* (2012); Asadullah and Ara, (2016); and Ahmed *et al.* (2009) show that grants and trainings help sustainably uplift the ultra poor segment of the population out of poverty. Similarly, a large number of studies evaluate microfinance though they show mixed evidence with regard its effectiveness (Pitt and Khandker 1998; Morduch 1998, Banerjee *et al.* 2015). A recent study on credit programme for tenant farmers also reports that the intervention has significantly improved financial inclusion rate among farmers, assisted graduation toward non-farming activities from farming as well as influenced women's participation in income generating activities (Malek *et al.* 2015). Impact assessment of Maternal, Neo-natal and Child Health programme shows that service delivered is having significant improvement over safe delivery within community (Quayyum *et al.* 2013). WASH programme has been found to have significantly improved sanitation condition in rural Bangladesh (Akter *et al.* 2014). There is, however, knowledge gap on whether the intervention that is implemented in a piecemeal basis help the people from geographically vulnerable areas facing multi-dimensional poverty. This paper advances our knowledge by investigating whether a programme that combines various development interventions addresses multi-dimensionality of poverty in geographically vulnerable areas.

#### 1.4 ORGANIZATION OF THE REPORT

The rest of the paper is organised as follows. Chapter 2 discusses the evaluation design and the data used for this study while chapter 3 provides descriptive statistics. Chapter 4 discusses the analytical technique. Chapter, 5 through 11 discuss the impacts of the intervention. Chapter 12 concludes.

## CHAPTER TWO

# EVALUATION DESIGN AND DATA COLLECTION

## 2.1 EVALUATION DESIGN

Before beginning of the implementation of the IDP, a census was conducted in Derai and Baniachong *upazila* from 2012-2013 (for Derai 2012 and for Baniachong 2013). The aim of the census was to examine the baseline socioeconomic conditions of the people living in these areas. It contained information on health, education, food security, water, sanitation and hygiene practices, etc. The census served as the benchmark information; the main limitation of the census, however, is that it did not cover households from non-intervention areas. As it is well known, for assessing the impact of any intervention one needs to control for the counterfactuals for which it is essential to survey non-participant households.

For post-intervention survey, it was thus imperative to collect information from households that did not receive IDP intervention. The post-intervention survey (hereafter we refer to “follow-up survey”) thus covered households from both intervention areas (a sub-sample of those covered by the census) and nearby non-intervention areas. The non-intervention areas were selected on the basis of sharing common border with intervention areas.

The selection process of survey sites for follow-up survey proceeded as follows. At first, the *upazilas* that share common border with Derai and Baniachong were identified. As depicted in Annexure (See Figures A1 and A2), there are 8-9 neighbouring *upazilas* of Baniachong and 10 of Derai. In the second step, the villages that are located at the periphery of intervention *upazilas* were selected. A total of 129 villages were selected through this process, of which 50 villages were from Derai and 79 from Baniachong. Similarly, from the non-intervention *upazilas*, 130 villages that have common border with Derai and Baniachong were selected. This gives us a sample of both intervention and non-intervention villages which can be expected to be reasonably similar because of geographical proximity. We plan to compare these two samples to estimate the impacts of the intervention.

However, the estimates of the impacts of the intervention by using sample from only bordering areas of Derai and Baniachong may not reflect the true impacts of the programme if the impacts are actually different for the households that are located

in non-bordering areas due to differences in their geographical characteristics, the intensity of the intervention etc. Hence, to investigate whether the impact is different between bordering and non-bordering areas another 130 intervention villages that are located in non-bordering areas of Derai and Baniachong were sampled. This sample of population will be compared with the sample from periphery of the intervention areas to understand whether there is any difference in changes in outcomes between the two samples.

This study thus covers a sample of 389 villages of which 130 villages are located in non-intervention areas, 129 villages are located at the periphery of intervention areas, and 130 villages are located at the central zone (non-periphery regions of intervention areas). From each village, 20 households were randomly surveyed. The total sample size is thus 7,780 households (Table 2.1). As mentioned earlier, to estimate the impact of the intervention, we will compare the households of the intervention and non-intervention areas that share common border. So, total sample size for these groups are about 4,674 households of which 2,074 are intervention or treatment households and 2,600 are comparison households.

**Table 2.1 | Distribution of study sample**

<i>Upazila</i>	No. of Villages from intervention areas		No. of Villages from non-intervention adjacent areas	Total	No. of households per village	Total no. of Households
	Boundary	Non-boundary				
Baniachong	50	80	50	180	20	3600
Derai	79	50	80	209	20	4180
Total	129	130	130	389	20	7780

## 2.2 DATA COLLECTION

As already mentioned, before the intervention took place in Derai and Baniachong, a census was conducted in these *upazilas*. The census mainly collected information on basic demographic characteristics of the household members, education and schooling of children, asset holding, health seeking behaviour, food security, etc. The follow-up survey conducted in 2016, almost three years after the intervention, collected detailed information at the household as well as individual level from both the intervention and non-intervention areas. At household level, it collected detailed information on asset holding (including financial, natural (lands), and physical assets), food security, food expenditure and calorie consumption<sup>3</sup> (last three days), issues

<sup>3</sup>The questionnaire included three-day recall questions for collecting dietary information. The respondents were asked to recall all the food items they consumed prepared at home as well as ready foods purchased from the street shops/hotels within the last three days prior to data collection.

related to women empowerment, legal and political awareness, vulnerability etc. It also covered information on sanitation and hygiene practices. At the individual level, the follow-up survey collected data on anthropometric measurements of under five children and women of reproductive age. It also collected information on immunisation of children, on current school enrollment status and level of education. Furthermore, information was also collected on health status and health seeking behaviour of all household members.

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## CHAPTER THREE

# COVERAGE OF THE IDP AND DESCRIPTIVE STATISTICS

This section provides information on the coverage under various components of the IDP. As already mentioned, some of the components of the IDP were targeted at the household level, and participants were selected based on a specific set of targeting criteria. The TUP programme, for instance, is such a component of the IDP. Hence, it is informative to provide some basic statistics regarding what percentage of households from target areas were covered by different components of the IDP.

This section also reports the changes in key outcome variables between baseline and follow-up for intervention areas. To document the changes, data for households that were covered by both follow-up survey and census were analysed. Thus, this section uses panel data for households located in the intervention areas. The data were analysed by segregating the households into three categories based on their location: plain land, moderate *haor* and deep *haor* areas. While the overall *haor* areas are situated in low lying zone there are areas where the lands are bit higher and the prevalence of water bodies are lesser; these areas are locally referred as plain land. The areas where the depth of *haor* with respect to the *haati* is moderate and the respective slopes are somewhat intermediate compared to the most depressed basins/deep *haors* are referred as moderate *haors*. Deep *haor* areas are the most depressed basins where extreme weather events like flash flood, high intensity waves etc. are much more destructive compared to moderate *haor* and plain lands (Ahmed 2012). It can be noted here that field enumerators discussed and confirmed with BRAC's local field staff to identify whether a particular area falls under deep *haor* or moderate *haor* or plain land.

### 3.1 IDP COVERAGE IN DERAJ AND BANIACHONG

Table 3.1 shows the coverage of the IDP activities in Deraj and Baniachong *upazilas*. Using data from census, we segregated the number of school aged children, adolescents, and females belonging to reproductive age (14-49). Then, comparing these data with the programmes' MIS data, we calculated the coverage of education, ADP and ANC of the IDP. For TUP and MF, we compare the total coverage as per MIS data with total number of households in these areas identified by the census.

Columns 1 and 4 of the Table 3.1 include the actual coverage of various components of the IDP (retrieved from MIS database) in Derai and Baniachong respectively. Columns 2 and 5 contain the actual number of households or population that are eligible for those services. And column 3 and 6 show the calculation of percentage of the coverage by the programme.

In order to know the coverage of the BRAC education programme, at first we have calculated the number of children between 8 to 12 years of age attending BRAC school in each *upazila* (MIS data) and then compared that with the calculated population of actual number of children (8-10 years) by using data from the census. We find that the IDP covered approximately 16 and 19 per cent of school aged children from Derai and Baniachong respectively. These data suggest that the rest of the children are either dependent on government schools or on other NGO/private institutions or do not attend school at all. Similarly, we have calculated the total number of adolescents covered by ADP clubs, and we notice that the programme still has a lot of scope for increasing its reach to adolescents in these areas.

In order to calculate the coverage by Anti-Natal Care (ANC) of the IDP, we have used information from BDHS (2013) data. It shows that crude birth rate is 20%. Then we have calculated the estimated number of occurred pregnancies in Derai and Baniachong *upazilas*. Next, by comparing the actual population with the number of women covered by the IDP, we found that anti-natal care component of the IDP covers about 28.12 per cent and 18.37 per cent households from Baniachong and Derai *upazilas* respectively.

**Table 3.1 | Coverage of the several complements of the IDP**

	Derai			Baniachong		
	Total coverage by IDP	Total HHs/ eligible population*	%	Total coverage by IDP	Total HHs/ eligible population*	%
	1	2	3	4	5	6
BRAC primary school (8-12 years old children)	6392	39267	16.28	10935	56664	19.30
Adolescent Development Programme (ADP) (11-19 years old adolescents)	2191	58290	3.78	4350	87736	4.95
Antenatal Care (ANC) (Pregnant mothers)	10297	56064	18.37	22417	79730	28.12
Microfinance	25673	49,299	52.08	38482	255,461	15.06
STUP (Specially Targeted Ultra Poor households)	12,400	49,299	25.25	12,400	255,461	9.41

\*For education, ADP, and ANC, number of eligible households reported. For STUP and MF, total number of households reported.

For estimating the coverage of microfinance and TUP, we compared the number of households of both *upazilas* with the actual number of microfinance borrowers and participants of TUP. We found that through BRAC microfinance, the IDP covered about 52.08 per cent and 15.06 per cent households and through TUP its coverage was about 25.25 and 9.41 per cent in Derai and Baniachong, respectively.

From the above discussion it is clear that most of the initiatives taken by the IDP has reached to a substantial portion of those in need. At the same time the data suggest that there is an imperative to expand the presence of the IDP and to follow a better way to reach to the poor with inputs and services as well as to organise the poor to guarantee their future access and control over such inputs and services.

In Table 3.2, we show coverage under various BRAC programmes that are integrated under the IDP, separately for intervention and non-intervention areas based on data from follow-up survey. We notice that the households from non-intervention areas had access to services/ supports that are provided through the IDP but the fraction of households supported is very low. It needs to be mentioned here that the interventions provided through the IDP are also in place all over the country but they are implemented in non-integrative manner. For our impact assessment, which is done by comparing households from the intervention and non-intervention areas, we disregard whether any household from the non-intervention areas got any support from BRAC. That is, our study assesses the impact of additional services provided through the IDP as well as the integration of the various services. We cannot separate out the effect of these two factors individually.

**Table 3.2 | Coverage under various BRAC programmes in the intervention and non-intervention areas (based on survey information)**

BRAC programmes	Intervention area	Non-intervention area
Microfinance (%)	18.9	10
Agriculture (%)	18.8	0.2
TUP (%)	8.0	0.2
Education (%)	5.5	3.8
WASH (%)	34.6	1.1
Health, Nutrition and Population (%)	15.2	1.2
Community empowerment (%)	46.5	1.2
HRLS (%)	0.8	0.0

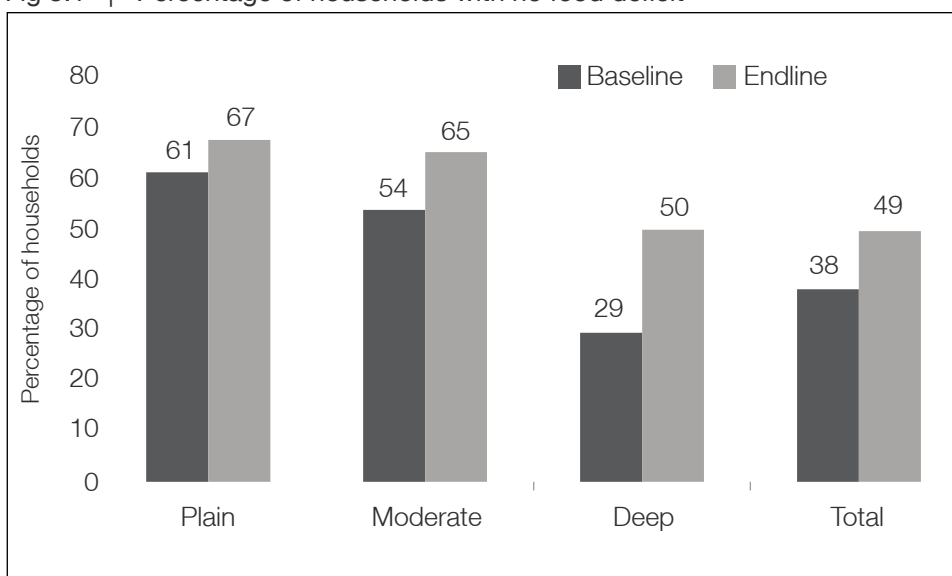
Note: Figures in percentage (total coverage\*100/ total number of HHs in the respective sample)

### 3.2 DESCRIPTIVE STATISTICS

#### 3.2.1 Food security

Figure 3.1 depicts the self-reported food security status of the surveyed households in treatment areas. According to the graph, food security situation has improved noticeably during baseline and endline. The highest improvement in food security occurred in the deep *haor* areas, which is about 20 percentage points increase. This is perhaps anticipated because at baseline, food security situation was worse in this area (deep *haor*) relative to the other parts. What is worth to note, is the fact that despite the large improvement in food security after three years of the intervention, almost half of the households from deep *haor* areas are still food insecure.

Fig 3.1 | Percentage of households with no food deficit

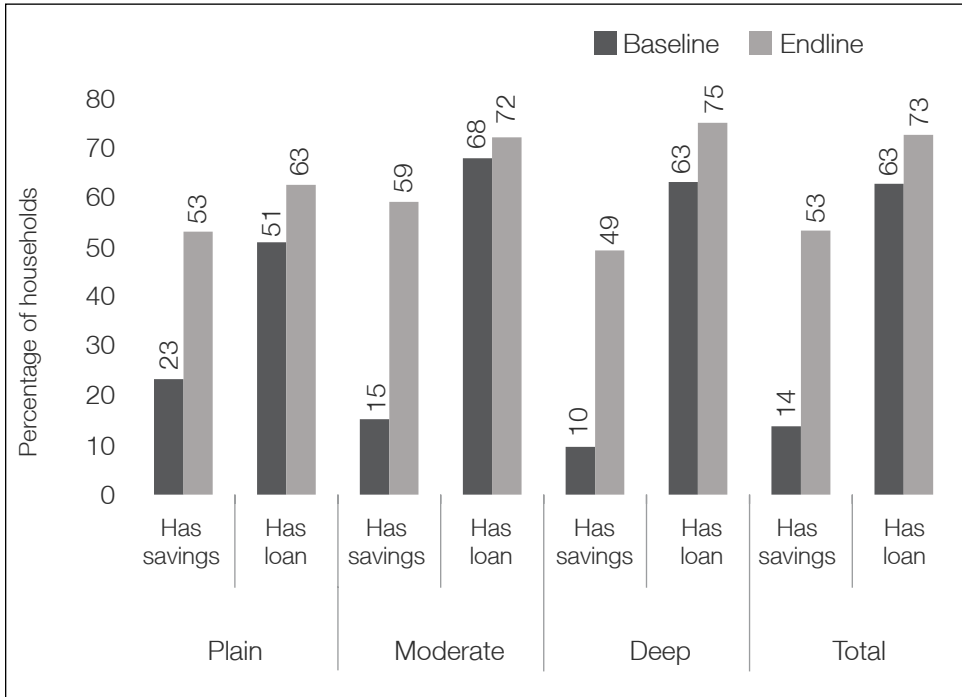


#### 3.2.2 Savings and credit

Figure 3.2 shows the percentage of households having cash savings and outstanding loans. Statistics show that at baseline, only 10% of the households from deep *haor* areas had cash savings while the corresponding proportions among those living in moderate and plain *haor* areas are 15% and 23% respectively. Savings is a means of coping with crisis and other urgent needs. These findings thus indicate that the households from more depressed basins are less likely to have any option to use savings for coping with crisis. However, savings behaviour increased dramatically after the intervention but at a higher rate among the people living in deep and moderate *haors*. With regard to credit, statistics show that the households from more

depressed basins are more likely to have outstanding loans at baseline, perhaps because they are forced to borrow more for coping with crisis as they hold smaller amount of savings.

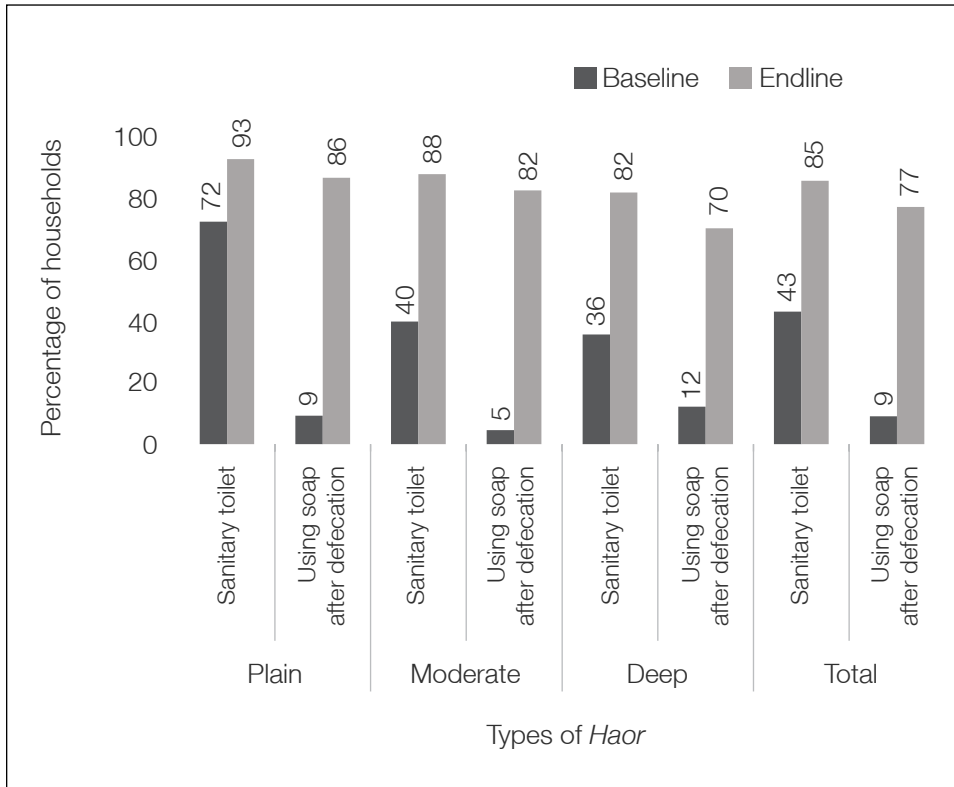
Fig 3.2 | Percentage of households having savings and credit



### 3.2.3 Water, sanitation and hygiene

Improving the water, sanitation and hygiene practice situation of the households in *haor* areas is one of the major objectives of the IDP. Figure 3.3 shows that at baseline, percentage of households using sanitary latrine was very low across deep and moderate *haor* areas compared to plain land. However, the situation improved remarkably after the programme intervention and the improvement seems to be larger for deep and moderate *haor* areas compared to plain land. Similarly, the practice of washing hand with soap after defecation has also increased noticeably among the *haor* dwellers.

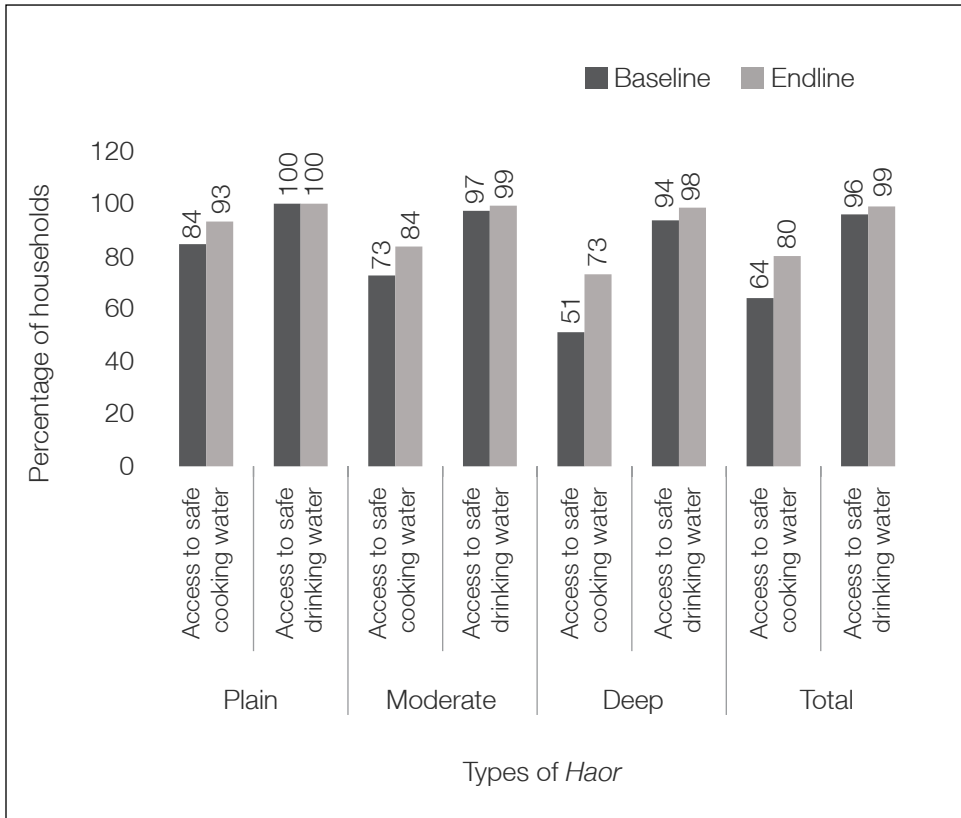
Fig 3.3 | Sanitation and hygiene practices



### 3.2.4 Safe water use

Figure 3.4 shows the changes in safe water use for cooking and drinking during baseline and follow-up. At baseline, almost all of the households from plain and moderate *haor* areas used safe water for drinking but in deep *haor* areas the proportion was slightly lower. After the intervention, the proportion of household using safe water increased to 98% in deep basin. At baseline, however, almost half of the households from deep *haor* areas did not use safe water for cooking, and the proportion was higher for plain land and moderate *haor* areas. In the post-intervention period, the proportion of households using safe water for cooking also increased to some extent. Overall use of safe drinking and cooking water has increased compared to baseline.

Fig 3.4 | Use of safe water



### 3.2.5 Schooling and educational attainment of children aged 6-10 years and 11-15 years

Figures 3.5 and 3.6 show the changes in educational attainment of boys and girls segregating them into two age-groups: 6-10 and 11-15 years. Percentage of children who can read and write, and enrollment rate have increased for both groups during baseline to endline. However, for current school enrollment, the rate of change is higher across all three regions. Additionally, like other indicators, the improvement is more visible in deep and moderate *haor* areas compared to plain land.

Fig 3.5 | Educational attainment of children aged 6-10 years

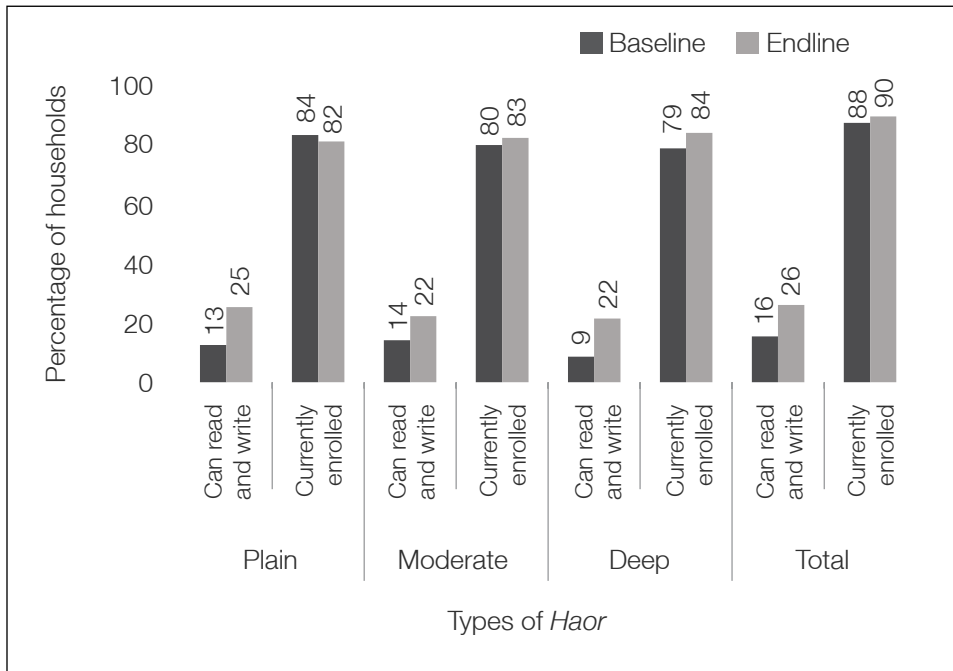
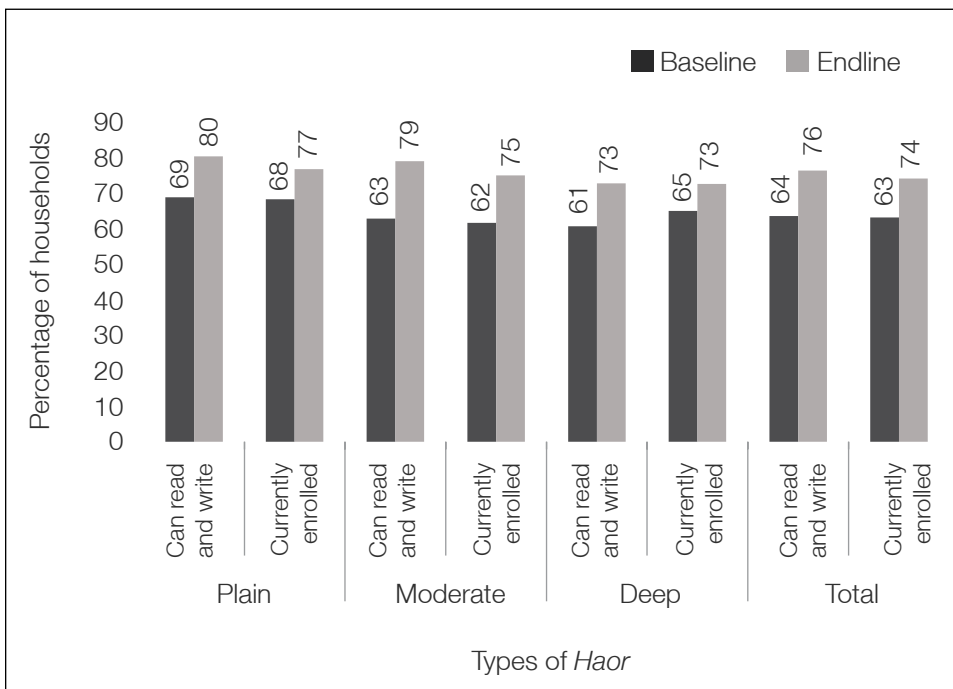


Fig 3.6 | Educational attainment of children aged 11-15 years



### 3.2.6 Changes in key outcomes during baseline and follow-up (separately for Derai and Baniachong)

Table 3.3 documents the changes in key outcomes during baseline and follow-up, separately for Derai and Baniachong. Rows 1-6 show outcomes for TUP households only. Statistics show that food security situation of the households covered by the TUP programme improved remarkably in both *upazilas*. We also notice that access to credit increased dramatically between baseline and follow-up. This is perhaps due to greater access to BRAC microfinance loans. Savings information was not available for baseline; but information collected during the follow-up survey shows that more than three-fourths of the TUP households from both Derai and Baniachong had cash savings.

Rows 7-14 of Table 3.3 show the changes in health and education related outcomes. In Derai, we found that, about 5.7% of the eligible women got ante-natal care during pregnancy at baseline which increased to 52% at endline. In regard to child birth under skilled birth attendant, we found that in Derai only 0.9% of pregnant women had child birth under skilled midwives at baseline whereas, at follow-up, 22.6% women received this facility. In Baniachong, 15.9% of the deliveries occurred under skilled attendance which increased to 21.6% at the endline. With regard to use of contraceptives by eligible couples, we notice that, in Derai, 40.9% couples used it at follow-up while the corresponding proportion was 34.1% at baseline. In Baniachong, on the other hand, the change is larger as at baseline 22% used birth control methods against 33% at follow-up.

Sanitation facilities have substantially improved in both *upazilas*. In Derai, percentage of households using sanitary latrine increased from 41.6% at baseline to 83.8% at endline. In Baniachong, the change is almost similar. With regard to access to safe drinking water, we detect similar rate of change across Derai and Baniachong *upazilas*. Hygiene practice has also improved during 2012/2013-2016. In Derai, the proportion of respondents using soap while using toilet has increased from 18.1% at baseline to 72.1% at follow-up. In Baniachong, the proportion of respondents using soap after defecation has increased to 92% at the follow-up while the proportion was 67% at baseline. Regarding education, we observe that the percentage of children enrolled in primary school increased by two percentage points during 2012-2016 both in Derai and Baniachong *upazilas*.

Regarding indicators related to CEP, GJD and HRLS, we were only able to calculate the percentage of men who recognise the importance of gender equality and allow their women counterparts to participate in development activities. Here, we found that gender equality has improved by 3.7 percentage points in Derai and 13 percentage points in Baniachong.

Table 3.3 | Changes in key outcomes during baseline and follow-up

Sl. No	Programmes key outcome indicators	Derai		Baniachong	
		Baseline 2012	Follow-up 2016	Baseline 2013	Follow-up 2016
1	% of TUP household facing food deficit	68.18	13.33	27.27	17.86
2	% of TUP households with access to credit	31.82	48.89	27.27	57.14
3	% of TUP households having savings	0	75.56	0	85.71
4	% of TUP households with <i>kacha</i> house	68.18	42.22	36.36	17.86
5	% of TUP households with MF loans	0	52.08	0	52.08
6	% of TUP households taking loan from moneylender	n.a	40.19	34.20	35.95
7	% of pregnant women received at least one ANC	5.7	52.1	na	na
8	Deliveries received through skilled birth attendant (%)	0.9	22.6	15.9	21.6
9	% of eligible couples using contraceptives	34.1	40.9	22.0	33.0
10	% of households with slab latrines (with water seal)	41.6	83.8	44.0	87.0
11	% of households with access to safe drinking water	94.9	99.1	97.0	99.0
12	% of the targeted people who practice washing hands with soap after defecation	18.1	72.1	67.0	92.0
13	Primary school aged children's enrolled in school (%)	81.0	83.0	80.2	82.9
14	% of children completed their primary education and get enrolled in secondary school.	24.0	31.0	27.0	30.69
15	% of men recognise importance of gender equality as well as allowing their women counterparts in development activities	54.2	57.9	51.0	64.0

## CHAPTER FOUR

# ANALYTICAL TECHNIQUE

In this section, we specify estimating equation for assessing the impact of the IDP on our outcome variables of interest. As already mentioned, we estimate the impact by comparing the households located inside but at bordering areas of Derai and Baniachong to those that are located outside but close to the bordering areas of Derai and Baniachong. Specifically, we estimate the following equations:

$$Y_{ij} = a + b\text{Treat}_j + T_v + e_{ij} \dots (1)$$

Where  $Y_{ij}$  is the outcome variable for household  $i$  in village  $v$  and sub-district  $j$ ,  $\text{treat}_j$  takes the value of 1 if sub district  $j$  is treated and 0 if not;  $T_v$  are village level fixed effects and  $e_{ij}$  is the error term.  $b$  measures the casual effect of the intervention assuming that there is no omitted variables that are correlated with the intervention. Given that the two groups of households, comparison and interventions groups, are located nearby the border of Derai and Baniachong, it is perhaps likely that they would have similar socioeconomic characteristics in absence of the intervention.

As we have shown in the descriptive analysis section, some of the households from non-IDP areas got supports from BRAC (Table 3.2). These supports were provided not through the IDP, but through BRAC regular activities all over the Bangladesh. But, as shown, a higher proportion of households from the IDP coverage areas got access to BRAC programmes. That is, the IDP not only integrated the intervention but also increased the coverage under each components. Hence,  $b$  in equation (1) measures the effect of additional intervention made under IDP as well as the integration of interventions.

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## CHAPTER FIVE

# IMPACT ON ASSET, EMPLOYMENT, AGRICULTURAL PRACTICE AND INCOME

## 5.1 IMPACT ON ASSET HOLDING

This section discusses the impacts of the IDP on asset holding. Assets are divided into three sub-categories: (1) physical assets which include business and non-business assets; (2) financial assets which includes savings and outstanding loans and (3) social assets.

### 5.1.1 Impact on physical assets (excluding land<sup>4</sup>)

Panel A of Table 5.1 reports the impacts of the IDP on productive assets holding and panel B reports the impacts on household durable assets holding. Here, column 1 shows the estimated impact and column 2 shows means of the outcome for the non-intervention areas and column 3 shows the impact in percentage. As can be seen, the intervention significantly increased the number of business assets such as goat and agricultural equipment like power pump, threshing machine, cowshed, and trees. Specifically, the IDP increased goat/sheep ownership, for example, by about 44%. Similarly, the value of productive assets is significantly higher (by BDT 6,808) for intervention areas compared to non-intervention ones (column 1 of Panel A of Table 5.1). Since the IDP transferred assets (livestock and poultry) to the ultra-poor, increase in productive assets as documented in Panel A of Table 5.1 is anticipated.

Analyses have been also carried out on household durable assets holding as these assets are considered important indicators of living standards. Results show that for most of the household assets, reported in panel B of Table 5.1, the programme has significant positive effects. Specifically, impact estimates show an increase in the ownership of television by 19%, electric fan by 20%, cell phone by 20% and bicycle by 15% (Column 3 of Table 5.1). These results indicate that the intervention has increased the living standard of the *haor* community.

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<sup>4</sup> Natural asset (that is land) has been excluded from the analyses due to the fact that land is very expensive; therefore, it is unlikely that the programme would affect land ownership.

Table 5.1 | Impact on productive and durable assets

Assets	Impact	Mean of outcome for non-intervention areas	Percentage change due to the intervention
	(1)	(2)	(3)
Panel A: Productive assets (number)			
Cow/Buffalo	0.722 (0.518)	2.663	27.11
Goat/Sheep	1.200** (0.515)	2.711	44.26
Chicken/Duck	-1.093 (1.54)	3.377	-32.37
Power pump	0.728* (0.413)	2.510	29.00
Plough	0.384 (0.971)	3.0	12.80
Threshing machine	1.061* (0.613)	2.747	38.62
Cow shed	1.192* (0.620)	2.634	45.25
Shop	3.17 (1.928)	2.530	125.30
Boat	1.181 (1.707)	3.389	34.85
Fishing net	0.95 (0.710)	2.794	34.00
Rickshaw/van	1.046 (0.811)	3.174	32.96
Tree	1.250** (0.592)	2.631	47.51
Value of business asset	6,808*** (1,863)	18,843	36.13
Panel B: Durable assets (number)			
Television	0.314*** (0.075)	1.675	18.75
Electric fan	0.327*** (0.074)	1.671	19.57
Freeze	0.227*** (0.072)	1.674	13.56
Cell phone	0.334*** (0.074)	1.682	19.86
Bi cycle	0.254*** (0.074)	1.704	14.91
Chair/Table	1.120***	6.720	16.67
Number of observation	4,674		

Note: \*\*\*, \*\*, \* denote significance at the 1%, 5%, and 10% levels respectively. The figures in parentheses are standard errors. Column (1) reports the impacts estimated of equation (1). That is, it reports the estimate of  $b$  of equation (1). Column (2) reports the mean of outcome variable for non-intervention areas. Column (3) reports the impact in percentage. Percentage change in outcomes due to the intervention are calculated as follows: divide the impact estimates (reported in column 1) by the mean of outcome for non-intervention areas (reported in column 2) and then multiply by 100.

### 5.1.2 Impact on financial assets (savings and credit)

Microfinance participants are generally encouraged to save on a weekly/monthly basis. Similarly, the participants of the TUP programme require to save on a weekly basis. As mentioned earlier, compared to non-intervention areas, a higher proportion of the households from intervention areas were covered by the TUP and microfinance programmes. It is thus likely that the IDP will impact on savings behaviour, and our results confirm this hypothesis (Table 5.2). The average amount of savings is higher for the households from intervention areas relative to non-intervention ones. Specifically, the programme increased savings by BDT 5,650 per household, showing about 186% increase due to the intervention.

Information reported in Table 5.2 also shows that the households from intervention areas are significantly more likely to save in formal institutions like: bank/post office and BRAC.

**Table 5.2 | Impact on savings behaviour**

Indicators	Impact	Mean of outcome for non-intervention areas	Percentage change due to the intervention
	(1)	(2)	(3)
Total amount of savings (BDT)	5,650*** (1149)	3044	185.6
Places where participants usually save (Amount/BDT):			
Home	454.3** (209)	466.0	97.48
Bank/Post office	5,107.0*** (1058)	1516.0	336.87
BRAC	14.340 (84)	361.0	3.97
BRAC TUP	232.1*** (30)	8.0	2901.25
Other NGO	-235.2 (154)	538.0	-43.71
Others	78.35 (248)	153.0	51.20
Number of observation	4,674	-	-

Note: \*\*\*, \*\*, \* denote significance at the 1%, 5%, and 10% levels respectively. The figures in parentheses are standard errors. Column (1) reports the impacts estimated of equation (1). That is, it reports the estimate of  $b$  of equation (1). Column (2) reports the mean of outcome variable for non-intervention areas. Column (3) reports the impact in percentage. Percentage change in outcomes due to the intervention are calculated as follows: divide the impact estimates (reported in column 1) by the mean of outcome for non-intervention areas (reported in column 2) and then multiply by 100.

Table 5.3 reports the impact of the intervention on outstanding loans. We see that the households from intervention areas had larger amount of outstanding loans compared to non-intervention areas but this difference is not statistically significant. Analysis also has been carried out on the sources of the loans. One of the objectives of the programme was to reduce dependency on moneylender loans due to exorbitant interest rate of these loans (Mallick 2009). After three years of programme intervention, the dependency on moneylender has declined significantly by nine percentage points (column 1 of Table 5.3). As the information presented in column 2 of Table 5.3 shows, about 36% of the households from non-intervention areas had taken loan from moneylender. These results indicate that moneylender loan declined by about 26% as a result of the intervention. Findings also show that programme participants are 15 percentage points (i.e. 110% decrease) less likely to borrow money from other NGOs ( $p < .01$ ). In contrast, they are 4 percentage points more likely to borrow from BRAC ( $p < .01$ ) (50% increase).

**Table 5.3 | Impact on credit**

Outstanding loan	Impact	Mean of outcome for non-intervention areas	Percentage change due to the intervention
	(1)	(2)	(3)
Amount of outstanding loan (BDT)	6,584 (4,031)	34811	18.9
Had outstanding loans from			
Bank (Yes=1, No=0)	0.001 (0.007)	0.037	2.7
Moneylender (Yes=1, No=0)	-0.094*** (0.017)	0.363	-25.9
Shopkeeper (Yes=1, No=0)	0.016** (0.007)	0.018	88.9
Friends/Relatives/neighbor (Yes=1, No=0)	0.086*** (0.015)	0.180	47.8
BRAC (Yes=1, No=0)	0.037*** (0.011)	0.074	50.0
Other NGOs (Yes=1, No=0)	-0.146*** (0.014)	0.133	-109.8
Number of observation	4,674		

Note: \*\*\*, \*\*, \* denote significance at the 1%, 5%, and 10% levels respectively. The figures in parentheses are standard errors. Column (1) reports the impacts estimated of equation (1). That is, it reports the estimate of b of equation (1). Column (2) reports the mean of outcome variable for non-intervention areas. Column (3) reports the impact in percentage. Percentage change in outcomes due to the intervention are calculated as follows: divide the impact estimates (reported in column 1) by the mean of outcome for non-intervention areas (reported in column 2) and then multiply by 100.

### 5.1.3 Impacts on social assets

Social asset is the hardest asset to define and measure. Effective reciprocal relationships help better access to information and insurance against crises. Similarly, trust and initiative for collective action in a community ensures better functioning of institutions and an enabling environment for economic agents. Hence, the programme that helps build better social asset is likely to increase access to information and insurance against crisis. In this section, an attempt thus has been made to assess the effect of the IDP on social assets. We use two indicators: (1) receiving invitation to social occasions, and (2) getting help during crisis from non-relative neighbour. Results in column 1 of Table 5.4 show that the households from intervention areas are 16 percentage points more likely to receive an invitation to social occasions from non-relative neighbours ( $p < .01$ ). This result corresponds to an increase in invitation from non-relative neighbour by 25% (column 3 of Table 5.4). Similarly, the households from intervention areas are 17 percentage points (98% increase) more likely to be helped by non-relative neighbours during crisis and needs, and this effect is statistically significant at 1% level (column 1 of Table 5.4).

Table 5.4: Impact on social assets

Indicators	Impact	Mean of outcome for non-intervention areas	Percentage change due to the intervention
	(1)	(2)	(3)
Received invitation from non-relative neighbour in last one year (yes=1, no=0)	0.158*** (0.022)	0.627	25.2
Helped by non-relative neighbour (yes=1, no=0)	0.174*** (0.020)	0.177	98.3
Number of observation	4,674		

Note: \*\*\*, \*\*, \* denote significance at the 1%, 5%, and 10% levels respectively. The figures in parentheses are standard errors. Column (1) reports the impacts estimated of equation (1). That is, it reports the estimate of  $b$  of equation (1). Column (2) reports the mean of outcome variable for non-intervention areas. Column (3) reports the impact in percentage. Percentage change in outcomes due to the intervention are calculated as follows: divide the impact estimates (reported in column 1) by the mean of outcome for non-intervention areas (reported in column 2) and then multiply by 100.

## 5.2 IMPACT ON EMPLOYMENT

This section discusses the impact of the IDP on employment. Since the IDP transferred assets to the ultra poor and increased access to microfinance of the poor, we expect that the intervention will affect employability and the types of earning activities of working age members. We find that, after three years of the intervention, the IDP has apparently succeeded in improving the occupational diversity among *haor* community (Table 5.5). Analysis of main occupation of the working age (15-65 years) males reveals that their involvement in non-agricultural self-employment has increased significantly by more than four percentage points ( $p < .01$ ) while their involvement in casual wage employment (agriculture and non-agricultural) and servants have declined significantly (column 1 of Table 5.5). Interestingly, working age populations' involvement in salaried occupation has increased significantly (column 1 of Table 5.5). Less dependency on agricultural wage employment can be viewed as a positive sign of departure from tradition bound status of poverty (Ahmed 2004).

Column 4 of Table 5.5 shows that working age (15-65 years) female members' involvement in agricultural self-employment has increased significantly by 4 percentage points ( $p < .01$ ) while their involvement in irregular occupations like non-agricultural wage employment decreased significantly by 1.4 percentage points. Results show that, a lower proportion of the females from intervention areas were involved in non-agricultural self-employment. This may be due to the fact that after the intervention the female members of the programme participant households were mainly engaged in livestock rearing and gardening.

Table 5.5 | Impact on main occupation of the working age males and females

	Male			Female		
	Impact	Mean of outcome for non-intervention areas	Percentage change due to the intervention	Impact	Mean of outcome for non-intervention areas	Percentage change due to the intervention
	(1)	(2)	(3)	(4)	(5)	(6)
Working age members involved in (as main occupation):						
Agri-self-employment (Yes=1, No=0)	0.021 (0.014)	0.505	4.16	0.036*** (0.012)	0.880	4.09
Non agri-self-employment (Yes=1, No=0)	0.043*** (0.010)	0.143	30.07	-0.016** (0.008)	0.052	-30.77
Agri wage employment (Yes=1, No=0)	-0.043*** (0.010)	0.169	-25.44	0.002 (0.004)	0.008	25.00
Non-agri wage employment (Yes=1, No=0)	-0.021** (0.010)	0.146	-14.38	-0.014*** (0.005)	0.019	-73.68
Salaried (Yes=1, No=0)	0.009** (0.004)	0.018	50.00	-0.007 (0.005)	0.018	-38.89
Servant (Yes=1, No=0)	-0.008** (0.004)	0.018	-44.44	-0.003 (0.006)	0.022	-13.64
Begging (Yes=1, No=0)	0.000 (0.001)	0.001	0.00	0.002* (0.001)	0.001	200.00
Number of observation	4,674			4,674		

Note: \*\*\*, \*\*, \* denote significance at the 1%, 5%, and 10% levels respectively. The figures in parentheses are standard errors. Column (1) reports the impacts estimated of equation (1). That is, it reports the estimate of  $\beta$  of equation (1). Columns (2) & (5) report the mean of outcome variable for non-intervention areas. Columns (3) & (6) report the impact in percentage. Percentage change in outcomes due to the intervention are calculated as follows: divide the impact estimates (reported in columns (1) & (4) by the mean of outcome for non-intervention areas (reported in columns (2) & (5), and then multiply by 100.

Even though the activities under the IDP did not directly aim at encouraging or reducing internal migration for work purpose, however, as per our analysis there is a noticeable difference between treated and non-treated areas regarding intra-country migration pattern (Table 5.6). Results reported in columns 1 and 2 indicate that among those households where at least one migrant member can be found, the average migrant member does not differ significantly between comparison and treatment groups.

**Table 5.6 | The impact on internal migration**

Indicators	Impact	Mean of outcome for non-intervention areas	Percentage change due to the intervention
	(1)	(2)	(3)
Family member migrated within country (above 5 years) (Mean)	0.032 (0.038)	1.12	2.86
Migration destination (1=different district/division; otherwise=0)	-0.194*** (0.034)	0.74	-25.68
Work found by:			
Self (Yes=1, No=0)	0.017 (0.037)	0.31	6.45
Community (Yes=1, No=0)	-0.015*** (0.037)	0.67	-2.99
NGO/Agency (Yes=1, No=0)	-0.008* (0.009)	0.01	-100.00
Migrated for working as non-farm labour (Yes=1, No=0)	-0.130*** (0.036)	0.64	-20.31
Money sent back home (Tk.)	8,592.66*** (1,911.83)	18,340.5	46.85
Number of observation	1,433		

Note: \*\*\*, \*\*, \* denote significance at the 1%, 5%, and 10% levels respectively. The figures in parentheses are standard errors. Column (1) reports the impacts estimated of equation (1). That is, it reports the estimate of  $b$  of equation (1). Column (2) reports the mean of outcome variable for non-intervention areas. Column (3) reports the impact in percentage. Percentage change in outcomes due to the intervention are calculated as follows: divide the impact estimates (reported in column 1) by the mean of outcome for non-intervention areas (reported in column 2) and then multiply by 100.

Furthermore, we notice that, among the households who did not get any support from the IDP, about 74% migrated in other districts/division, whereas, among those who were beneficiaries of the IDP, this proportion was about 54.6%. Hence, the programme participants are less likely to migrate in different districts or division ( $p < .01$ ), as there is a reduced tendency among the treated households in terms of distant migration. Apparently, survival migration characterised by movement to short-distance place (Klemans 2015) has increased among the treatment community which might be attributed to better employment opportunity in own union, *upazila* or district such that people do not need to migrate to distance.

The scope of internal migration is mostly searched through self-patronisation; assistance of community members such as friends or families who are working in another area and finally through NGO/agency. In this context, we find that, relative to comparison households, migrants from treated communities are less dependent on community and NGO/agency for seeking job as they rely more on own self to search for opportunities. Furthermore, among the households from IDP areas, members who have migrated are less inclined to work as non-farm labourer. Result shows that the households from the intervention areas are 13 percentage points less likely to be involved in non-farm activities compared to comparison areas. Despite, no explicit intervention or support, we find that, internal remittance sent by treatment migrants are significantly higher than that of comparison migrants ( $p < .01$ ).

**Table 5.7 | The impact on international migration**

Indicators	Impact	Mean of outcome for non-intervention areas	Percentage change due to the intervention
	(1)	(2)	(3)
Households have at least one migrant member (Yes=1, No=0)	0.023*** (0.008)	0.03	76.67
Who supported them to migrate			
Self (Yes=1, No=0)	0.096* (0.054)	0.01	960.00
Community (Yes=1, No=0)	-0.256 (0.168)	0.68	-37.65
NGO (Yes=1, No=0)	0.000 (0.061)	0.00	0.00
Agency (Yes=1, No=0)	-0.160 (0.086)	0.33	-48.49
Amount spent for going abroad (in Tk)	1,09,072.3* (65,811.89)	2,62,746.60	41.51
How money managed			
Savings (Yes=1, No=0)	0.014 (0.200)	0.38	3.68
Loan (Yes=1, No=0)	0.024 (0.216)	0.60	4.00
Remittance received in last one year (Yes=1, No=0)	0.264* (0.150)	0.77	34.29
Number of observation	146		

Note: \*\*\*, \*\*, \* denote significance at the 1%, 5%, and 10% levels respectively. The figures in parentheses are standard errors. Column (1) reports the impacts estimated of equation (1). That is, it reports the estimate of  $b$  of equation (1). Column (2) reports the mean of outcome variable for non-intervention areas. Column (3) reports the impact in percentage. Percentage change in outcomes due to the intervention are calculated as follows: divide the impact estimates (reported in column 1) by the mean of outcome for non-intervention areas (reported in column 2) and then multiply by 100.

Safe Migration Programme, a component of the IDP, addresses the challenges poor and vulnerable face through providing information about legalised and safe process for international migration. We find that the treatment households are about two percentage points more likely to have internationally migrated members in comparison to non-treated households (columns 1 and 2 of Table 5.7). As we have seen in the financial assets section (section 5.1.2), the IDP has increased access to credit and income; hence, households from intervention areas are less credit constrained.

Studies show that capital constraint often deters international migration (Angelucci 2014). Hence, more international migration from treatment areas may be due to more access to credit and information.

### 5.3 IMPACT ON AGRICULTURAL PRACTICE AND HOMESTEAD GARDENING

This section discusses the impacts of the IDP on agricultural practice and homestead gardening. In Boro season, which is the major cropping season in *haor*, cultivation is dominated by hybrid variety of paddy such as BR-28, BR-29. In addition to high yielding varieties, traditional varieties of paddy (Heera, Jagoroni, Binni, Jonokraj, Laldingi, Aftab etc.) and other Robi crops (potato, mainze) are cultivated as well. Non-paddy crops are cultivated mostly for subsistence consumption. Table 5.8 presents the impact of the IDP on area under cultivation and total earnings from land cultivation for Boro season. We notice that the intervention increased area under cultivation ( $p < .01$ ). The magnitude of the effect is about 26% (column 3 of Table 5.8). Here, results show that, relative to comparison areas, total production of farming households of the treated areas increased by 19%. Overall, income of the treated households has gone up by 16% compared to non-treated households. In order to know whether the programme has increased productivity, we have analysed total production and revenue per decimal, and our findings show that production per decimal indeed increased but the effect is not statistically significant. It needs to be mentioned here that due to the intervention total land under cultivation has gone up; it may be that some less productive lands have come under cultivation. Hence, there is methodological limitation to assess the effect on productivity.

Table 5.8 | Impact on agricultural production (Boro season)

Indicators	Impact	Mean of outcome for non-intervention areas	Percentage change due to the intervention
	(1)	(2)	(3)
Amount of land cultivated (decimal)	57.40*** (13.50)	216.7	26.49
Total production (in kg)	543.7*** (191.5)	2805.9	19.38
Total income from production (BDT)	5901.3** (2513.3)	36834.9	16.02
Total expenditure (BDT)	4723.3*** (1717.9)	25387.3	18.60
Total revenue (BDT per decimal)	-0.404 (13.05)	66.2	-0.61
Crop production (Kg per decimal)	0.316	14.7 (0.513)	2.15
Expenditure (BDT per decimal)	-1.686 (11.04)	132.9	-1.27
Number of observation	4,674		

Note: \*\*\*, \*\*, \* denote significance at the 1%, 5%, and 10% levels respectively. The figures in parentheses are standard errors. Column (1) reports the impacts estimated of equation (1). That is, it reports the estimate of  $b$  of equation (1). Column (2) reports the mean of outcome variable for non-intervention areas. Column (3) reports the impact in percentage. Percentage change in outcomes due to the intervention are calculated as follows: divide the impact estimates (reported in column 1) by the mean of outcome for non-intervention areas (reported in column 2) and then multiply by 100.

Table 5.9 reports the impact of the IDP on homestead gardening. We find that the programme has been successful in increasing homestead vegetation practice among the *haor* dwellers. Relative to non-intervention areas, the households from treatment areas are five percentage points (10% increase) more likely to have homestead gardens (Columns 1 and 3 of Table 5.9). Furthermore, their income from homestead gardening is significantly higher by BDT. 320 (Column 1 of Table 5.9). This result is significant at the 1% level. However, statistically significant effect could not be detected in cases of subsistence fishing and commercial fisheries.

**Table 5.9 | Impact on practice of homestead gardening and fishing in last one year**

Indicators	Impact	Mean of outcome for non-intervention areas	Percentage change due to the intervention
	(1)	(2)	(3)
Homestead vegetation in last 1 year (Yes=1, No=0)	0.05** (0.02)	0.50	9.90
If yes, amount sold and consumed (in BDT)	319.9*** (113.1)	1102.9	29.01
Fishing from nearby water body in last 1 year (Yes=1, No=0)	0.02 (0.02)	0.536	3.73
If yes, amount sold and consumed (in BDT)	-592.5 (708.8)	8558.0	-6.92
Commercial fishing in last 1 year (Yes=1, No=0)	0.01 (0.006)	0.02	52.94
If yes, amount sold and consumed (in BDT)	(277.9 (311.2)	400.7	69.35
Commercial production of dried fish (Yes=1, No=0)	0.00 (0.004)	0.01	0.00
If yes, amount sold and consumed (BDT)	56.1 (57.70)	29.5	190.17
Number of observation	4,674		

Note: \*\*\*, \*\*, \* denote significance at the 1%, 5%, and 10% levels respectively. The figures in parentheses are standard errors. Column (1) reports the impacts estimated of equation (1). That is, it reports the estimate of b of equation (1). Column (2) reports the mean of outcome variable for non-intervention areas. Column (3) reports the impact in percentage. Percentage change in outcomes due to the intervention are calculated as follows: divide the impact estimates (reported in column 1) by the mean of outcome for non-intervention areas (reported in column 2) and then multiply by 100.

## 5.4 IMPACT ON INCOME

This section discusses the impact of the IDP on income. As already shown (in Table 5.5), the intervention increased self-employment while decreasing casual wage employment. It also increased productive asset holding (Table 5.1). It is thus likely that the programme would impact the income of the participant households. Results reported in Table 5.10 confirms this hypothesis. Specifically, the intervention increased per capita annual income by BDT. 1507 ( $p < .05$ ). On average, the earning of a typical

family member in non-intervention areas was about BDT. 17,315, indicating that the effect on per capita income is equivalent to nine per cent of the non-participants' income. According to Ahmed *et al.* (2013) annual income of an average person in Sylhet division is about BDT 35,424, which is substantially higher than the annual per capita income of an average person in *haor* region. The vast contrast in income connotes the status of vulnerability of this remote region. The IDP seems to decrease this gap to some extent.

**Table 5.10 | Impact on per capita income (BDT/yearly)**

	Impact	Mean of outcome for non-intervention areas	Percentage change due to the intervention
Indicators	(1)	(2)	(3)
Per capita annual income (in BDT)	1507.2** (667.08)	17,315	8.70
Number of observation	4,674		

Note: \*\*\*, \*\*, \* denote significance at the 1%, 5%, and 10% levels respectively. The figures in parentheses are standard errors. Column (1) reports the impacts estimated of equation (1). That is, it reports the estimate of  $b$  of equation (1). Column (2) reports the mean of outcome variable for non-intervention areas. Column (3) reports the impact in percentage. Percentage change in outcomes due to the intervention are calculated as follows: divide the impact estimates (reported in column 1) by the mean of outcome for non-intervention areas (reported in column 2) and then multiply by 100.

## 5.5 CONCLUDING REMARKS

In this section, we have investigated whether the IDP has any effects on assets ownership, employment and income. The IDP has been found to increase productive asset holding (such as goat/sheep, agricultural equipment), and household durable assets such as TV, cell phone, fan, bi-cycle etc. The IDP has succeeded in increasing savings and borrowing possibility at lower interest rate, hence treated people are now less inclined to take up any wage earning activities. Results also indicate that the programme increased self-employment for both males and females while decreased wage employment. These findings are consistent due to the fact that capital constrained people are more likely to engage in wage employment (Banerjee and Newman 1993). Regarding migration, we notice that the programme decreased internal migration but increased international migration. This finding goes well with global migration scenario where policy formulation for international migration has received more attention due to the possible economic benefits and on the other hand, though internal migration holds same economic possibilities, policies has been less focused on this due to the challenges it presents to developing country governments (DeWind *et al.* 2005). Finally, we have shown that the intervention has been able to increase income of the *haor* community.

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## CHAPTER SIX

# IMPACT ON FOOD SECURITY, FOOD CONSUMPTION AND NUTRITIONAL STATUS

This chapter describes the impact of the intervention in terms of food security, food consumption and nutritional status of the *haor* dwellers. The prevalence of food poverty and vulnerability among *haor* dwellers is very high. As reported in the descriptive statistics section (section 3.2.1), at baseline, more than 50% of the households from intervention areas reported that they were food insecure. One of the key objectives of the IDP is to improve food security of the *haor* dwellers. The evaluation of Targeting the Ultra Poor (TUP) programme that transfers assets as grants stipend shows that it is very effective for improving food security (Krishna, *et al.* 2012). As TUP is also a component of the IDP, we thus expect that the intervention would impact food consumption.

### 6.1 SELF-PERCEIVED FOOD SECURITY

Table 6.1 reports the effects of the intervention on self-reported food security. Findings show that the proportion of households reporting moderate food insecurity has declined significantly by about 19 percentage points (36% decrease) as a result of the programme intervention (columns 1 and 3 of Table 6.1). In tandem, the proportions of treated households with somewhat and always food surplus have gone up significantly by 10 and 7 percentage points respectively ( $p < .01$ ) after three years of intervention. These findings show a 25% and 194% increase in regard to food security due to the intervention for households with somewhat and always food surplus (column 3 of Table 6.1). Although the programme has large effects on food security, a significant proportion of the households from intervention areas are still insecure, as shown in descriptive analysis section (section 3.2.1). Nevertheless, since the programme has generated livelihood pathways through generating productive asset-base and self-employment, it is likely that it may further improve food security in the long-run but further study should be conducted to investigate the longer-term impacts of the programme.

Table 6.1 | Impact on food security

Indicators	Impact	Mean of outcome for non-intervention areas	Percentage change due to the intervention
	(1)	(2)	(3)
Always deficit (Yes=1, No=0)	0.02** (0.01)	0.02	126.88
Somewhat deficit (Yes=1, No=0)	-0.19*** (0.02)	0.53	-36.50
Somewhat surplus (Yes=1, No=0)	0.10*** (0.02)	0.42	24.64
Always surplus (Yes=1, No=0)	0.07*** (0.012)	0.04	193.71
Number of observation	4,674		

Note: \*\*\*, \*\*, \* denote significance at the 1%, 5%, and 10% levels respectively. The figures in parentheses are standard errors. Column (1) reports the impacts estimated of equation (1). That is, it reports the estimate of  $b$  of equation (1). Column (2) reports the mean of outcome variable for non-intervention areas. Column (3) reports the impact in percentage. Percentage change in outcomes due to the intervention are calculated as follows: divide the impact estimates (reported in column 1) by the mean of outcome for non-intervention areas (reported in column 2) and then multiply by 100.

## 6.2 FOOD CONSUMPTION, CALORIE INTAKE AND FOOD EXPENDITURE

Table 6.2 shows the effects of the IDP on the consumption of various food items, caloric intake and their expenditure on these food items.<sup>5</sup> We notice that the programme significantly increased per capita<sup>6</sup> consumption of the food items like vegetables (either green or roots and tubers or others which is rich in potassium, dietary fiber, folate (folic acid), vitamin A, and vitamin C), fish, meat and egg. Similarly, the amount of calorie intake from these food items have increased. Consistent with these results, the programme increased per capita food expenditures on most of the items reported in Table 6.2. At the aggregate level, as the statistics reported in the Table 6.2 show, total per capita food consumption increased by 83 gram (9%), per capita expenditure increased by BDT 8 (22%), per capita calorie intake increased by 64 kcal (3%). These findings indicate that with the increase in income and asset ownership, the welfare of households from intervention areas has improved as well.

<sup>5</sup> The questionnaire included three-day recall questions to gather dietary information. The respondents were asked to recall all food items they consumed prepared at home and ready foods purchased from the street shops/hotels within the last three days prior to data collection. A checklist of food items was used by the enumerators to help the respondents recall the names and amount of the food consumed. The checklist also helped them calculate the number of household members who had eaten during those days. The quantity of food consumed at household level was first estimated in household measures (i.e., cup, spoon, bowl etc.) and then the amount had converted into grams. The amounts of ingredients of cooked food were calculated using a conversion table that was provided to the enumerators. The food items are pooled into thirteen basic groups for the analysis such as (1) cereals, (2) pulses and legumes, (3) roots and tubers, (4) green vegetables, (5) other vegetables, (6) seeds, (7) fruits, (8) meat, (9) fish, (10) egg (11) milk and milk products, (12) oily/fats, (13) miscellaneous food groups. In order to calculate calorie intake, we convert the amount of consumption of different food items into standard unit of measurement (100 gram). Then, calorie intake per 100 gram of each of the different food items were multiplied by the respective amount consumed. Food expenditure was recorded based on the local market price of the foods consumed during the three days prior to data collection. We used local market value of the foods that are produced, received in kind or collected otherwise by the households, and included the value to estimate food expenditure.

<sup>6</sup> The number of persons eating per day was calculated based on the number of persons who ate at least one meal in a particular day. To standardise the consumption at the household level, all children aging below 10 years were weighted 0.5 to convert them into adult equivalent following Gibson (2005) and BBS (2006). And finally, we derived per capita food intake, expenditure and calorie intake by dividing the total household consumption of three days by the number of persons (including guests) in that household for the same time.

Table 6.2 | Impact on food consumption, calorie intake, and food expenditure

Food items	Per capita food intake (gram/day)		Per capita calorie intake (Kcal/day)		Per capita food Expenditure (BDT/day)	
	Impact	Mean of outcome for non-intervention areas	Impact	Mean of outcome for non-intervention areas	Impact	Mean of outcome in non-treated areas
Cereals	(1) -3.167 (7.622)	(2) 547.5	(3) -12.08 (27.09)	(4) 1947.9	(5) 1.2*** (0.24)	(6) 15.5
Pulse and legumes	0.07 (0.62)	9.30	0.22 (2.11)	31.7	-0.02 (0.08)	1.00
Green vegetables	6.19*** (2.08)	29.9	0.06 (1.15)	15.1	0.22*** (0.04)	0.6
Roots and Tubers	14.55*** (2.86)	113.6	10.66*** (2.67)	102.7	0.35*** (0.09)	3.2
Other vegetables	43.13*** (4.41)	119.4	17.50*** (2.32)	50.2	0.94*** (0.1)	2.5
Fruits	-0.15 (1.20)	5.07	0.99 (0.88)	3.4	0.38*** (0.14)	0.5
Fish	11.56*** (1.67)	35.9	13.71*** (1.79)	35.1	2.99*** (0.37)	8.4
Meat	4.33*** (1.08)	4.8	4.69*** (1.20)	5.4	1.21*** (0.32)	1.2
Egg	1.14*** (0.32)	2.6	2.05*** (0.58)	4.7	0.38*** (0.09)	0.7
Milk and milk products	2.51 (2.72)	24.0	1.86 (1.83)	16.1	-0.01 (0.14)	1.3
Fats and edible oil	2.88*** (0.41)	18.1	25.93*** (3.68)	162.8	0.53*** (0.05)	2.1
Total	82.64*** (12.07)	931.4	64.23** (30.16)	2438.7	8.454*** (0.86)	39.0
Number of observation	4674		4,674		4,674	

Note: \*\*\*, \*\*, \* denote significance at the 1%, 5%, and 10% levels respectively. The figures in parentheses are standard errors. Columns (1), (3) & (5) report the impacts estimated of equation (1). That is, these report the estimate of b of equation (1). Columns (2), (4) & (6) report the mean of outcome variable for non-intervention areas.

We have disaggregated the sample households based on their status of calorie consumption (Table 6.3). As already shown in Table 6.2, relative to the non-intervention area, the average amount of calorie intake of the households from intervention areas is significantly higher (Column 1 of Table 6.2). Results in Table 6.3, on the other hand, show that among the households from intervention areas, about 10.6% consumed less than 1800 Kcal on average whereas for non-intervention areas, the corresponding proportion is almost 13%. Around 18% and 23% of the households from intervention and non-intervention areas consumed on average 1800 to 2200 Kcal respectively. On the other hand, 71% of the households

from intervention areas consumed more than 2200 Kcal against 64% for non-intervention areas. These results imply that comparatively a higher proportion of the treated group consume more than 2200 Kcal per day which indicates a very positive impact of the programme.

**Table 6.3 | Calorie consumption status of the surveyed households**

Calorie consumption	Intervention	Non-intervention	Total
Below 1800 Kcal (%)	10.56	12.96	11.90
1800 to 2200 Kcal (%)	18.13	22.69	20.67
More than 2200 Kcal (%)	71.31	64.35	67.44

### 6.3 DIETARY DIVERSITY OF THE SURVEYED HOUSEHOLDS

In addition to the amount of food consumption, food expenditure and calorie intake, the quality of food consumed by the surveyed households has also been explored by estimating Dietary Diversity Score (DDS). Dietary diversity is defined as the sum of the number of different food items consumed over a given reference period (Hoddinott *et al.* 2002). We estimate dietary diversity score based on the twelve food items consumed by the surveyed households in last three days from the time of survey. It is assumed that greater the diversity in consumption, more food security is being perceived and enjoyed. Table 6.4 shows that the dietary diversity score is higher for households of intervention areas ( $p < .01$ ).

After constructing the dietary diversity score, the surveyed households are classified into three groups. Consumption of more than eight different food groups in last three days is classified as high dietary diversified, seven to eight groups as medium diversified, and less than six groups as low diversified (Table 6.4). As shown in columns 1 and 3 of Table 6.4, the proportion of households from treated communities that consume maximum five different food items and six to eight different food items in three days decreased after three years of the programme intervention (decreased by 14% and 2.9% respectively). By contrast, the proportion of treated households that consumed more than eight different food items increased significantly by 3 percentage points (25% increase) due to the intervention ( $p < .10$ ).

Table 6.4 | Impact on dietary diversity

Indicators	Impact	Mean of outcome for non-intervention areas	Percentage change due to the intervention
	(1)	(2)	(3)
Dietary diversity score (mean)	0.17*** (0.06)	7.04	2.41
Low diversified (DDS≤5) (Yes=1, No=0)	-0.01 (0.01)	0.05	-14.00
Medium diversified (DDS=6-8) (Yes=1, No=0)	-0.03 (0.02)	0.83	-2.90
High diversified (DDS>8) (Yes=1, No=0)	0.03* (0.02)	0.12	24.59
Number of observation	4674		

Note: \*\*\*, \*\*, \* denote significance at the 1%, 5%, and 10% levels respectively. The figures in parentheses are standard errors. Column (1) reports the impacts estimated of equation (1). That is, it reports the estimate of  $b$  of equation (1). Column (2) reports the mean of outcome variable for non-intervention areas. Column (3) reports the impact in percentage. Percentage change in outcomes due to the intervention are calculated as follows: divide the impact estimates (reported in column 1) by the mean of outcome for non-intervention areas (reported in column 2) and then multiply by 100.

## 6.4 IMPACT ON NUTRITIONAL STATUS OF UNDER FIVE CHILDREN (6-59 MONTHS)

Malnutrition is malicious through inter-generational transmission mechanism as it not only affects the individuals but also passes on to the next generation as a malnourished girl of today becomes the malnourished mother tomorrow and eventually gives birth to infants who struggle to develop and thrive. Despite the conclusion of Millennium Development Goals, global malnutrition among under 5 children still remains very high<sup>7</sup>, and Bangladesh is a country where prevalence of malnutrition is one of the highest in the world.

In Bangladesh, millions of children suffer from one or more forms of malnutrition including low birth-weight, wasting, stunting, under-weight, vitamin A deficiencies, iodine deficiency disorders and anaemia. Nationally, 56% of under-five children are underweight, and 54% suffer from stunting, and 17% from wasting (FAO 2010)<sup>8</sup>. The underlying causes of malnutrition include the inability of the households to grow and/or purchase sufficient food to meet their needs, poor maternal and child-care practices including inadequate breastfeeding and complementary feeding for infants and young children, and inadequate provision of food for adolescent girls and pregnant and lactating women.<sup>9</sup>

<sup>7</sup> <https://data.unicef.org/topic/nutrition/malnutrition/>

<sup>8</sup> [http://www.fao.org/ag/agn/nutrition/bgd\\_en.stm](http://www.fao.org/ag/agn/nutrition/bgd_en.stm)

<sup>9</sup> [http://www.unicef.org/bangladesh/health\\_nutrition\\_377.htm](http://www.unicef.org/bangladesh/health_nutrition_377.htm)

Table 6.5 reports the impact of the IDP on nutritional status of under five children (column 1), mean of the outcomes for non-intervention areas (column 2) and national average (column 3). Information in Panel A of Table 6.5 indicates that stunting rate among boys in *haor* (column 2) is remarkably higher compared to national average especially for moderate to severe stunting (HAZ) where the difference is almost 15 percentage points. However, we do not find significant impact of the intervention on any of the three indicators of malnutrition for boys.

In Panel B, the similar indicators of malnutrition are reported for girls. Here, the difference between nutritional status of the girls from *haor* and national is large, particularly for stunting. In contrast to the impact of the IDP on boys, for girls the IDP has effectively reduced severely underweight by 10 percentage points. Furthermore, it led to a reduction in moderate to severely wasting by about 11 percentage points. These effects are statistically significant at the 5% level.

**Table 6.5 | Impact on nutritional status of under 5 children**

	Impact	Mean of outcome for non-intervention areas	National average BDHS 2016
Nutritional characteristics (mean)	(1)	(2)	(3)
Panel A: Less than 5 year old children (Boys/6-59 months)			
Underweight (WAZ)			
Moderate to severely underweight (<-2SD) (Yes=1, No=0)	0.07 (0.07)	0.34	0.32
Severely underweight(<-3SD) (Yes=1, No=0)	0.04 (0.04)	0.08	0.06
Wasting (WHZ)			
Moderate to severely wasted (<-2SD) (Yes=1, No=0)	0.02 (0.04)	0.09	0.15
Severely wasted (<-3SD) (Yes=1, No=0)	0.03 (0.02)	0.01	0.04
Stunting (HAZ)			
Moderate to severely stunted (<-2SD) (Yes=1, No=0)	0.1 (0.07)	0.52	0.37
Severely stunted(<-3SD) (Yes=1, No=0)	0.06 (0.06)	0.23	0.12
Number of observation	684		
Panel B : Less than 5 year old children (Girls/6-59 months)			
Underweight (WAZ)			
Moderate to severely underweight (<-2SD) (Yes=1, No=0)	-0.03 (0.08)	0.38	0.33
Severely underweight <-3SD (Yes=1, No=0)	-0.10** (0.04)	0.1	0.08
Wasting (WHZ)			
Moderate to severely wasted (<-2SD) (Yes=1, No=0)	-0.11** (0.05)	0.11	0.14
Severely wasted ( <-3SD) (Yes=1, No=0)	-0.02 (0.02)	0.03	0.02
Stunting (HAZ)			

[ Table 6.5 Contd... ]

[ ...Table 6.5 Contd ]

	Impact	Mean of outcome for non-intervention areas	National average BDHS 2016
Nutritional characteristics (mean)	(1)	(2)	(3)
Moderate to severely stunted (<-2SD) (Yes=1, No=0)	0.05 (0.08)	0.52	0.35
Severely stunted (<-3SD) (Yes=1, No=0)	-0.06 (0.06)	0.22	0.11
Number of observation	656		

Note: \*\*\*, \*\*, \* denote significance at the 1%, 5%, and 10% levels respectively. The figures in parentheses are standard errors. Column (1) reports the impacts estimated of equation (1). That is, it reports the estimate of b of equation (1). Column (2) reports the mean of outcome variable for non-intervention areas.

As is well-known, stunting is a long-term indicator of malnutrition, and hence it requires time to have an impact on stunting.<sup>10</sup> Moreover, recent literature investigating the determinants of chronic malnutrition among children finds that the demographic characteristics such as age of child, interval between birth, mother's education and nutrition, household wealth, child feeding index and incidence of fever, ARI and diarrhoea are significant predictors of child malnutrition (Das and Rahman 2011, Rahman and Chowdhury 2007). Nevertheless, with higher consumption impact of the IDP, we speculate that the programme might improve the overall nutritional status of the children in the long-run.

## 6.5 IMPACT ON NUTRITIONAL STATUS OF WOMEN

Table 6.6 presents the impact of the IDP on nutritional status of women (age 15-49 years). BMI (body mass index) of an average rural woman in Bangladesh is 22.3 (BDHS 2016). On the other hand, BMI of an average woman from *haor* areas is 17.57 (Column 2 of Table 6.6), indicating that the nutritional status of women in *haor* areas is poor.<sup>11</sup> However, our findings show that the IDP increased BMI of the prime age women to some extent but this effect is not statistically significant (Columns 1 of Table 6.6). But the proportion of women with moderate to severe malnourishment has declined by six percentage points (8.9% decrease), and this effect is statistically significant (Columns 1 and 3 of Table 6.6).

<sup>10</sup>[http://www.indepth-network.org/Resource%20Kit/INDEPTH%20DSS%20Resource%20Kit/Anthropometric\\_status\\_indicators.htm](http://www.indepth-network.org/Resource%20Kit/INDEPTH%20DSS%20Resource%20Kit/Anthropometric_status_indicators.htm)

<sup>11</sup>The extent of malnourishment among women of Derai and Baniachong is far above to that of other *haor upazilas*. In 2015, another survey indicates that about 30% of the *haor* females were severe to moderately malnourished Shahed *et al.* (unpublished). But about 67% women are severe to moderately malnourished, which include a dominant 39.9% who happens to be severely malnourished. (Table 6.6 also indicates that malnourishment is higher among women within age of 25 to 34. Considering women yet married from a tender age of 14-15 years Shahed *et al.* (unpublished) can be a major contributing factor to poorer maternal nutritional condition.)

**Table 6.6 | Impact on nutritional status of women (15-49) years)**

Indicators	Impact	Mean of outcome for non-intervention areas	Percentage change due to the intervention
	(1)	(2)	(3)
Weight (kg, mean)	1.98 (1.39)	26.4	7.52
Height (in cm, mean)	2.97 (2.69)	113.0	2.63
BMI (mean)	0.30 (0.27)	17.57	1.72
Severe malnourished (<16) (Yes=1, No=0)	-0.01 (0.04)	0.4	-1.75
Moderate to severe malnourished (<18) (Yes=1, No=0)	-0.06* (0.04)	0.67	-8.92
Normal (18.5-24.9)(Yes=1, No=0)	0.03 (0.03)	0.29	10.24
Obese (>=25)(Yes=1, No=0)	0.03 (0.01)	0.03	78.79
Number of observation	2,729		
Moderate to severe malnourished women by age group			
15 to 24 years (Yes=1, No=0)	0.06 (0.09)	0.30	20.67
25 to 34 years (Yes=1, No=0)	-0.1 (0.1)	0.51	-19.25
35 to 44 years (Yes=1, No=0)	0.01 (0.07)	0.17	6.47
45 to 49 years (Yes=1, No=0)	0.01 (0.07)	0.17	6.47
Number of observation	404		

Note: \*\*\*, \*\*, \* denote significance at the 1%, 5%, and 10% levels respectively. The figures in parentheses are standard errors. Column (1) reports the impacts estimated of equation (1). That is, it reports the estimate of b of equation (1). Column (2) reports the mean of outcome variable for non-intervention areas. Column (3) reports the impact in percentage. Percentage change in outcomes due to the intervention are calculated as follows: divide the impact estimates (reported in column 1) by the mean of outcome for non-intervention areas (reported in column 2) and then multiply by 100.

## 6.6 CONCLUDING REMARKS

To summarise the major findings, results show that after the intervention, food security status has improved remarkably. Similarly, consumption basket is more diversified in the treatment areas compared to the non-intervention one. These effects are perhaps generated by income increase through occupational changes, more agricultural production, and increase in home-based vegetable and livestock production.

Though the IDP did not improve the nutritional status of boys, but for girls we find some evidence of decrease in the proportion of underweight and wasting. Looking at the nutritional indicators for women, we find that, the IDP decreased the proportion of malnourished women.

## CHAPTER SEVEN

# IMPACT ON HEALTH, WATER, SANITATION AND HYGIENE PRACTICES

This section focuses on the impacts of the intervention on health seeking behaviour, water, sanitation and hygiene practices. To begin with, we look at the impacts of the intervention on health seeking behaviour. Later, we look at the impacts on housing condition, and sanitation and hygiene practices.

### 7.1 IMPACT ON HEALTH SEEKING BEHAVIOUR

In order to address health issues, the IDP established a number of healthcare centres in the intervention areas. Table 7.1 documents the impact of the programme on health seeking behaviour for the individuals who were sick in the last 15 days of the survey. We observe that the intervention has decreased the proportion of sick individuals who did not seek any medical treatments (decreased by 31%). The likelihood that medical care is sought from unqualified village doctors and drug sellers has declined significantly by 12 ( $p < 0.01$ ) and 3 ( $p < 0.05$ ) percentage points respectively due to the intervention. On the other hand, health seeking behaviour from formal institutions has increased significantly by 7 percentage points ( $p < .01$ ). The magnitude of the effect on this outcome is large, recording about 50% increase (column 3 of Table 7.1).

Table 7.1 | Impact on health seeking behaviour

Seeking health care from	Impact (1)	Mean of outcome for non-intervention areas (2)	Percentage change due to the intervention (3)
Did nothing (Yes=1, No=0)	-0.02* (0.01)	0.06	-30.91
Formal institution (Yes=1, No=0)	0.07*** (0.02)	0.14	49.63
Drug seller (Yes=1, No=0)	-0.03** (0.01)	0.11	-29.46
Village doctor (Yes=1, No=0)	-0.12*** (0.02)	0.25	-47.41
Traditional healers (Yes=1, No=0)	0.01 (0.00)	0.01	62.50
Homeopath (Yes=1, No=0)	-0.01* (0.01)	0.02	-47.37
Number of observations	4,674		

Note: \*\*\*, \*\*, \* denote significance at the 1%, 5%, and 10% levels respectively. The figures in parentheses are standard errors. Column (1) reports the impacts estimated of equation (1). That is, it reports the estimate of  $b$  of equation (1). Column (2) reports the mean of outcome variable for non-intervention areas. Column (3) reports the impact in percentage. Percentage change in outcomes due to the intervention are calculated as follows: divide the impact estimates (reported in column 1) by the mean of outcome for non-intervention areas (reported in column 2) and then multiply by 100.

Panel A of Table 7.2 shows the impact of the intervention on the use of antenatal care (ANC).<sup>12</sup> As can be seen, the IDP has increased antenatal care by about 9 percentage points (15% increase), the number of antenatal checkup check-up by 0.86 (33% increase), and receiving medicine from BRAC staff by 35 percentage points (980% increase) (columns 1 and 3, Panel A of Table 7.2). Similarly, the households from intervention areas were more likely to have antenatal check-up card (124% increase) and take at least 3 antenatal cares (51% increase) during last pregnancy ( $p < .01$ ). The consequence of higher rate of receiving ANC by pregnant mothers is that it may decrease pregnancy related complications and improve child health. In 2014, about 79% of the women in Bangladesh were reported to have ANC from any providers (BDHS 2016) whereas among non-treated households in our sample the proportion is only 56.6% (column 2 of Table 7.2), indicating that *haor* areas are lagging behind regarding antenatal care. However, as already mentioned, the programme was able to increase the use of ANC to some extent. Yet, after the intervention, the gap between *haor* areas and general rural areas still persists.

Panel B of Table 7.2 reports the impacts of the intervention on child birth related issues. The programme increased the number of live-births and still births, and decreased abortion but these effects are not statistically significant. Panel C of Table 7.2 shows that, as a result of the programme intervention, delivery at formal and medical care centre has increased by 3 percentage points (8% increase) but this effect is statistically insignificant. Panel D of Table 7.2 presents the impact of the intervention on knowledge and practice of breastfeeding. One of the most important components of ANC is offering information and advice to women about pregnancy-related complications and possible curative measures for the early detection and management of complications. Results show that the intervention increased mothers' awareness about the importance of breastfeeding to their child (6 percentage points). Women from intervention area are more likely to be aware about exclusive breastfeeding ( $p < .01$ ). Further, we see that the knowledge has transformed into practice. The proportion of children who are exclusively breastfed increased significantly by 6 percentage points (27% increase) ( $p < .01$ ).

Results reported in Panel E of Table 7.2 show that the IDP increased the number of postnatal care by 0.08 (column 1) but this effect is not statistically significant. BRAC integrated postnatal care through field/community health workers to help mothers and newborns accessing essential health services. Post-natal care is important due to the fact that new-born survival is inextricably linked to the health of mother as the death of mother at childbirth could instigate high risk of death for newborns (UNFPA 2005). Hence, for both newborns and mothers, the highest risk of death occurs at delivery, followed by the first hour and days after childbirth. The postnatal period (the time just after delivery and through the first six weeks of life) is especially critical for newborns and mothers. Evidence from Bangladesh indicates that the majority of maternal deaths occur between the third trimester and the end of the first week after pregnancy (Ronsman *et al.* 2006).

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<sup>12</sup>Information collected for last pregnancy period of the women of surveyed households.

Results in panel F of Table 7.2 show that the programme decreased the prevalence of breathing related complications of the children and more children from intervention areas sought treatment for complications related to breathing issue ( $p < .01$ ). Regarding the use of contraceptives, there is no significant difference between treatment and comparison areas as shown in panel G of Table 7.2.

**Table 7.2 | Impact on the practice of seeking health services before, during and after child birth**

Indicators	Impact	Mean of outcome for non-intervention areas	Percentage change due to the intervention
	(1)	(2)	(3)
Panel A: Antenatal care (ANC)			
Received antenatal care during last pregnancy (Yes=1, No=0)	0.09** (0.04)	0.57	15.19
Number of antenatal checkup during last pregnancy	0.86*** (0.17)	2.63	32.60
Received at least 3 antenatal care during last pregnancy (Yes=1, No=0)	0.22*** (0.05)	0.43	51.16
Have antenatal checkup card (Yes=1, No=0)	0.16*** (0.03)	0.13	123.81
Received medicine from BRAC staff (Yes=1, No=0)	0.35*** (0.04)	0.04	980.56
Panel B: Child Birth			
Did anyone in your HH conceive in last 3 year (Yes=1, No=0)	-0.01 (0.02)	0.4	-2.76
Did get ANC (Yes=1, No=0)	0.22*** (0.04)	0.34	62.87
Number of live birth in last 3 years	0.01 (0.03)	0.40	3.49
Number of live birth in last 1 years	0.02 (0.02)	0.14	15.44
Number of abortions in last 3 years	-0.01 (0.01)	0.02	-29.41
Number of still birth in last 3 years	0 (0.01)	0.01	0.00
Number of still birth in last 1 years	0 (0.00)	0.01	0.00
Maternal death in last 3 years (Yes=1, No=0)	0.001 (0.00)	0.002	50.00
Panel C: Child delivery			
Formal/Medical Centre (Yes=1, No=0)	0.03 (0.03)	0.3	8.36
Skilled delivery (Yes=1, No=0)	0.03 (0.02)	0.15	18.37
Panel D: Breastfeeding knowledge and practice			
Have knowledge about exclusive breastfeeding (Yes=1, No=0)	0.06*** (0.02)	0.24	23.46
Infant received colostrum milk after birth (Yes=1, No=0)	0.02 (0.02)	0.31	5.54
Infant is exclusively breastfed (Yes=1, No=0)	0.06*** (0.02)	0.21	27.18

[ Table 7.2 continued... ]

[ ...Table 7.2 ]continued ]

Indicators	Impact	Mean of outcome for non-intervention areas	Percentage change due to the intervention
	(1)	(2)	(3)
Panel E: Postnatal care (PNC)			
Number of postnatal care received after last delivery	0.08 (0.14)	1.29	6.03
Panel F: Health services for infants			
Received vaccination (Yes=1, No=0)	-0.01 (0.03)	0.87	-1.37
In last two weeks did your child experienced any breathing issues (Yes=1, No=0)	-0.14*** (0.03)	0.21	-66.51
Seek help for your child's breathing issue (Yes=1, No=0)	0.2*** (3.94)	0.76	25.83
In last two weeks did your child suffered from diarrhoea issues (Yes=1, No=0)	-0.02 (1.40)	0.07	-24.62
Did you nursed your child during diarrhea (Yes=1, No=0)	-0.01 (0.15)	0.8	-1.51
Seek for medical help during diarrhoea (Yes=1, No=0)	-0.09 (0.10)	0.94	-9.08
Panel G: Family planning			
Use of birth control method (Yes=1, No=0)	-0.02 (0.026)	0.44	-3.44
Number of observation	4,674		

Note: \*\*\*, \*\*, \* denote significance at the 1%, 5%, and 10% levels respectively. The figures in parentheses are standard errors. Column (1) reports the impacts estimated of equation (1). That is, it reports the estimate of b of equation (1). Column (2) reports the mean of outcome variable for non-intervention areas. Column (3) reports the impact in percentage. Percentage change in outcomes due to the intervention are calculated as follows: divide the impact estimates (reported in column 1) by the mean of outcome for non-intervention areas (reported in column 2) and then multiply by 100.

## 7.2 IMPACT ON WATER, SANITATION AND HYGIENE PRACTICES

Poor sanitation practices are responsible for poor health status. Diarrhoea and respiratory disease - the combined leading causes of childhood mortality globally and in Bangladesh - are common amongst rural children.<sup>13</sup> As discussed earlier, at baseline, open defecation and the use of unsafe water were very common in the intervention areas (section 3.2.3 and 3.2.4).

The IDP intends to improve the sanitation practices among *haor* dwellers through providing latrine, tubewell etc. Results show a large and statistically significant impacts of the intervention on the use of sanitary latrine and safe water for cooking

<sup>13</sup>Source: Bangladesh Health and Injury Survey 2004

(Table 7.3). Specifically, the intervention increased the use of sanitary latrine by about 34 percentage points (77% increase) and tubewell water for cooking by 25 percentage points (37% increase) (Columns 1 and 3 on Table 7.3).

The *haor* region is lagging far behind with regard to sanitation coverage in rural Bangladesh. In 2014, about two-thirds of the households from rural area had access to improved sanitation facilities (BDHS 2016) whereas, in 2016, among our sample households who did not receive any intervention, only 45% had such access (column 2 of Table 7.3). This vast difference shows the magnitude of under-development in *haor* area, which though was reduced by the IDP intervention, however, could not be completely removed. Further, results show that family members from intervention areas were more likely to use sandal while using toilet ( $p < .05$ ). Regarding housing, a higher proportion of households from intervention areas reported that they had separate kitchen for cooking ( $p < .05$ ) as well as shed for their cattle ( $p < .01$ ).

**Table 7.3 | Impact on sanitation and housing**

Indicators	Impact	Mean of outcome for non-intervention areas	Percentage change due to the intervention
	(1)	(2)	(3)
Use sanitary latrine (Yes=1, No=0)	0.34*** (0.02)	0.45	76.96
Use tubewell water for drinking (Yes=1, No=0)	-0.01 (0.01)	0.10	-0.70
Use tubewell water for cooking (Yes=1, No=0)	0.25*** (0.02)	0.69	36.87
Wear sandal while go for toilet (Yes=1, No=0)	0.03** (0.02)	0.81	4.08
Have separate kitchen (Yes=1, No=0)	0.05** (0.02)	0.58	8.58
Have cowshed (Yes=1, No=0)	0.15*** (0.02)	0.24	62.29
Number of observation	4,674		

Note: \*\*\*, \*\*, \* denote significance at the 1%, 5%, and 10% levels respectively. The figures in parentheses are standard errors. Column (1) reports the impacts estimated of equation (1). That is, it reports the estimate of  $b$  of equation (1). Column (2) reports the mean of outcome variable for non-intervention areas. Column (3) reports the impact in percentage. Percentage change in outcomes due to the intervention are calculated as follows: divide the impact estimates (reported in column 1) by the mean of outcome for non-intervention areas (reported in column 2) and then multiply by 100.

### 7.3 CONCLUDING REMARKS

We find that there have been noticeable changes toward accessing health service in case of illness. Moreover, the practice of visiting formal institutions has been observed to have increased. In tandem, breastfeeding knowledge and awareness related to antenatal care have also improved remarkably which may further improve the health condition of infants. Improved postnatal care has also been established leading to lower incidence of birth related complication. In terms of sanitation practice we find that, the target of the IDP was successfully achieved. Results suggest that

a large and statistically significant impact of the intervention can be detected toward improved sanitation and safe water access.

On the other side, the aim of IDP to ensure safe birth was limited in achievement as child delivery practice is dominated by traditional home delivery. Therefore, the risk of infant morbidity and mortality still persists. Moreover, family planning practice and the use of birth control must be made widely available in order to control the population size in *haor*.

## CHAPTER EIGHT

# IMPACT ON CRISIS AND VULNERABILITY

The multidimensionality of poverty elevates the magnitude of uncertainty and vulnerability. Feelings of insecurity, uncertainty and defenselessness can aggressively diminish the current state of well-being (Calvo *et al.* 2007). In this section, we explore to what extent the IDP has reduced the crisis and incidences faced by the *haor* dwellers.

### 8.1 INCIDENCES OF CRISIS AND EVENTS

*Haor* basins are adversely affected by various covariate shocks such as drought and flood. Table 8.1 presents the impacts of the programme on the incidence of various covariates and idiosyncratic shocks. Results show that the IDP has been successful in reducing the incidences of some shocks to some extent (Panel A of Table 8.1). Programme has reduced the likelihood of loss of livestock/crop by 6 percentage points ( $p < .05$ ). This might have happened due to the fact that the participant households have become more aware on prevention of damage/loss of livestock/crop. However, findings show that legal dispute is still higher in the treatment areas, maybe because households from these areas are more likely to take legal actions against disputes. Further results show that the programme has decreased the incidences of death of the household member by 2 percentage points (94% decrease).

Table 8.1 | Impact on crisis faced by *haor* community

	Impact	Mean of outcome for non-intervention areas	Percentage change due to the intervention
Indicators	(1)	(2)	(3)
Panel A: incidence/crisis			
Death of HH member (Yes=1, No=0)	-0.02*** (0.01)	0.02	-94.44
Loss of livestock/crop (Yes=1, No=0)	-0.06** (0.02)	0.43	-12.85
Legal dispute (Yes=1, No=0)	0.02*** (0.01)	0.02	94.74
Theft in the HH (Yes=1, No=0)	-0.002 (-0.01)	0.04	-5.41

[ Table 8.1 continued... ]

[ ...Table 8.1 continued ]

Indicators	Impact	Mean of outcome for non-intervention areas	Percentage change due to the intervention
	(1)	(2)	(3)
Panel B: Expense for the incident (BDT)			
Death of HH member	-105.3 (260.9)	352.27	-29.89
Loss of livestock/crop	835.9 (1198)	8,781.53	9.52
Legal dispute	468.5 (428.5)	692.54	67.65
Theft in the HH	50.860 (222.8)	603.73	8.42
Other incidence	-327.6 (1552)	3,230.54	-10.14
Number of observation	4,674		

Note: \*\*\*, \*\*, \* denote significance at the 1%, 5%, and 10% levels respectively. The figures in parentheses are standard errors. Column (1) reports the impacts estimated of equation (1). That is, it reports the estimate of  $b$  of equation (1). Column (2) reports the mean of outcome variable for non-intervention areas. Column (3) reports the impact in percentage. Percentage change in outcomes due to the intervention are calculated as follows: divide the impact estimates (reported in column 1) by the mean of outcome for non-intervention areas (reported in column 2) and then multiply by 100.

Panel B of Table 8.1 reports the impact of the IDP on damage expenses due to different crises. Here we see that financial expenses incurred due to various shocks are relatively higher for treatment households, however, the differences between treatment and comparison groups are not significant statistically.

## 8.2 CRISIS COPING MECHANISM

Table 8.2 presents the effect of the IDP on crisis coping mechanism. Results show that the households from intervention areas were more likely to borrow to cope up with the crisis they faced. Similarly, the proportion of households that do nothing during crisis has reduced significantly by 8 percentage points (column 1 of Table 8.2), which is equivalent to about 20% reduction (column 3 of Table 8.2). These findings imply the fact that compared to comparison group, the programme participants are more capable to cope up with crises. The use of savings for coping up with crisis has also increased due to the intervention but this effect is not statistically significant.

Table 8.2 | Impact on crisis coping mechanism

	Impact	Mean of outcome for non-intervention areas	Percentage change due to the intervention
Crisis coping mechanism	(1)	(2)	(3)
Did nothing (Yes=1, No=0)	-0.08*** (0.02)	0.41	-19.95
Borrowed (Yes=1, No=0)	0.02** (0.01)	0.02	73.91
Spent from savings (Yes=1, No=0)	0.02 (0.01)	0.07	20.27
Reduced household expenditure (Yes=1, No=0)	0.01 (0.02)	0.11	7.96
Assistance from relatives/friends (Yes=1, No=0)	0.02 (0.02)	0.33	4.52
Sold assets (Yes=1, No=0)	0.01 (0.01)	0.04	32.56
Other (Yes=1, No=0)	0.01** (0.01)	0.01	133.33
Number of observation	4,674		

Note: \*\*\*, \*\*, \* denote significance at the 1%, 5%, and 10% levels respectively. The figures in parentheses are standard errors. Column (1) reports the impacts estimated of equation (1). That is, it reports the estimate of  $b$  of equation (1). Column (2) reports the mean of outcome variable for non-intervention areas. Column (3) reports the impact in percentage. Percentage change in outcomes due to the intervention are calculated as follows: divide the impact estimates (reported in column 1) by the mean of outcome for non-intervention areas (reported in column 2) and then multiply by 100.

### 8.3 CONCLUDING REMARKS

*Haor* basins are adversely affected by various covariate shocks such as drought and flood. Our results show that the IDP has been successful in reducing the incidences of various covariate and idiosyncratic shocks to some extent. However, the programme has been marginally effective in cutting down the damage due to shocks. Further, after the intervention, people are more likely to borrow to cope up with various crises. By contrast, they are less likely to ‘do nothing’ while facing various crises.

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## CHAPTER NINE

# IMPACT OF THE IDP ON EDUCATION

Educational support is one of the major components under the IDP which aims to improve the educational status of the school aged children by increasing enrollment rate as well as by providing better quality education. This section assesses the impact of the IDP on enrollment, dropout and quality of education.

### 9.1 IMPACT ON EDUCATIONAL ATTAINMENT

Here, impact of the IDP on educational attainment is measured by enrollment rate for children aged between 6 to 10 years and 11 to 14 years. Table 9.1 reports the impact on enrollment rate of 6-10 years old children, separately for boys and girls. As our results suggest, the intervention has increased enrollment rate for both boys and girls (6-10 years old), but these impacts are not statistically significant. Results indicate that enrollment rate for boys increased by 2.3% against 0.34% for girls (column 3 of Table 9.1).

Table 9.1 | Impact on enrollment of primary school age children (6-10 years)

Enrollment status	Impact	Mean of outcome for non-intervention areas	Percentage change due to the intervention
	(1)	(2)	(3)
6-10 years old boys (Yes=1, No=0)	0.02 (0.03)	0.86	2.33
6-10 years old girls (Yes=1, No=0)	0.003 (0.02)	0.89	0.34
Number of observations	4,674		

Note: \*\*\*, \*\*, \* denote significance at the 1%, 5%, and 10% levels respectively. The figures in parentheses are standard errors. Column (1) reports the impacts estimated of equation (1). That is, it reports the estimate of  $b$  of equation (1). Column (2) reports the mean of outcome variable for non-intervention areas. Column (3) reports the impact in percentage. Percentage change in outcomes due to the intervention are calculated as follows: divide the impact estimates (reported in column 1) by the mean of outcome for non-intervention areas (reported in column 2) and then multiply by 100.

Table 9.2 looks at enrollment of 8-14 years old children, separately for boys and girls. Here, an older age cohort has been observed to assess the outcome of BRAC intervention as BRAC works to include children who still remain out of schools. Results show that the IDP has increased enrollment rate at the primary level for boys by 7 percentage points (7.8% increase) and this effect is statistically significant at the 5% level (column 1 of Table 9.2). For girls, corresponding point estimate is negative but statistically insignificant. At the secondary level, by contrast, the effects have been found to be positive for both boys and girls, but the effects are not statistically significant.

**Table 9.2 | Impact on enrollment of children (8-14 years)<sup>14</sup>**

	Impact	Mean of outcome for non-intervention areas	Percentage change due to the intervention
Enrollment status	(1)	(2)	(3)
Primary school enrolment (8-10 years): Boys (Yes=1, No=0)	0.07** (0.03)	0.89	7.87
Primary school enrolment (8-10 years): Girls (Yes=1, No=0)	-0.01 (0.02)	0.95	-1.05
Secondary school enrolment (11-14 years): Boys (Yes=1, No=0)	0.00 (0.04)	0.71	0.00
Secondary school enrolment (11-14 years): Girls (Yes=1, No=0)	0.05 (0.04)	0.82	6.09
Number of observation	4,674		

Note: \*\*\*, \*\*, \* denote significance at the 1%, 5%, and 10% levels respectively. The figures in parentheses are standard errors. Column (1) reports the impacts estimated of equation (1). That is, it reports the estimate of  $b$  of equation (1). Column (2) reports the mean of outcome variable for non-intervention areas. Column (3) reports the impact in percentage. Percentage change in outcomes due to the intervention are calculated as follows: divide the impact estimates (reported in column 1) by the mean of outcome for non-intervention areas (reported in column 2) and then multiply by 100.

As already shown, the effect of the IDP on education is very small and often statistically insignificant. For better understanding of the educational status in *haor*, we analyse the types of schools attended by children (Table 9.3). Here, data indicate that, at pre-primary level, enrollment rate in intervention area is higher relative to non-intervention areas ( $p < .01$ ). On the other hand, at primary level a higher proportion of boys and girls from treated areas study in *Madrassa*, and lower proportion in BRAC primary school as well as in other non-government school relative to non-intervention areas.

<sup>14</sup> Despite, national age level for primary school enrollment starting from age of six, here we considered primary school starting age from eight years as this is the age set by BRAC Education Programme. The rationale behind increasing the minimum age is to include the children who have dropped out from the mainstream primary schools.

Table 9.3 | Impact on the types of schools attended

Enrolled in	Impact	Mean of outcome for non-intervention areas	Percentage change due to the intervention
	(1)	(2)	(3)
Pre-primary school (Yes=1, No=0)	0.02*** (0.01)	0.01	114.29
Government school (Yes=1, No=0)	-0.02 (0.02)	0.55	-3.61
BRAC primary (Yes=1, No=0)	-0.04*** (0.01)	0.05	-80.85
Non-government school (Yes=1, No=0)	-0.03* (0.02)	0.27	-11.70
Religious education (Yes=1, No=0)	0.06*** (0.01)	0.12	54.78
Number of observation	4,674		

Note: \*\*\*, \*\*, \* denote significance at the 1%, 5%, and 10% levels respectively. The figures in parentheses are standard errors. Column (1) reports the impacts estimated of equation (1). That is, it reports the estimate of  $b$  of equation (1). Column (2) reports the mean of outcome variable for non-intervention areas. Column (3) reports the impact in percentage. Percentage change in outcomes due to the intervention are calculated as follows: divide the impact estimates (reported in column 1) by the mean of outcome for non-intervention areas (reported in column 2) and then multiply by 100.

We have also explored whether the accessibility to educational institutions is different between treated and non-treated areas. We provide some descriptive statistics regarding this instead of assessing the impacts because it is less likely that the intervention would directly affect accessibility to educational institutions. As the results presented in Appendix Table A1 suggest, across all seasons, travelling to either BRAC or government primary schools is more time consuming for the students from intervention areas compared to those students living in comparison areas. This implies that, educational establishment has not progressed as widely as needed.

## 9.2 SCHOOL PARTICIPATION

Although enrollment rate is one of the widely used indicators of educational attainment, this may not provide us with the detailed picture of educational quality. To get a better understanding, we also investigate school participation. Results presented in Table 9.4 show that dropping out of school for children aged 8-10 years has been significantly reduced by the intervention ( $p < .05$ ) which was one of the goals of the education component under the IDP. Further, results show that a higher proportion of children from intervention areas reported to attend school yesterday (previous day of data collection) for both 8-10 years and 11-14 years old children, perhaps indicating some improvement in regular attendance in school.

**Table 9.4 | Impact on school attendance**

	Impact	Mean of outcome for non-intervention areas	Percentage change due to the intervention
Education	(1)	(2)	(3)
Drop out of school: Age: 8-10 (Yes=1, No=0)	-0.04** (0.01)	0.03	-133.33
Drop out of school: Age: 11-14 (Yes=1, No=0)	-0.01 (0.03)	0.17	-5.88
Have not gone to school ever: Age: 8-10 (1=yes, 0=No)	-0.00 (0.02)	0.05	0.00
Have not gone to school ever: Age: 11-14(1=yes, 0=No)	-0.02 (0.02)	0.09	22.22
Went to school yesterday: (Age: 8-10) (1=yes, 0=No)	0.06** (0.02)	0.91	6.59
Went to school yesterday: (Age:11-14) (1=yes, 0=No)	0.06* (0.02)	0.89	5.34
Number of observation	4,674		

Note: \*\*\*, \*\*, \* denote significance at the 1%, 5%, and 10% levels respectively. The figures in parentheses are standard errors. Column (1) reports the impacts estimated of equation (1). That is, it reports the estimate of b of equation (1). Column (2) reports the mean of outcome variable for non-intervention areas. Column (3) reports the impact in percentage. Percentage change in outcomes due to the intervention are calculated as follows: divide the impact estimates (reported in column 1) by the mean of outcome for non-intervention areas (reported in column 2) and then multiply by 100.

### 9.3 CONCLUDING REMARKS

In this section we assessed the effect of the IDP on access to and quality of education. Results show that enrollment rate for boys has increased to some extent. Similarly, dropping out tendency has also declined. Children from intervention areas are more likely to be regular in school, indicating that the quality of education has perhaps improved to some extent.

## CHAPTER TEN

# IMPACT OVER AWARENESS RAISING AT HOUSEHOLD AND COMMUNITY LEVEL

Given that poverty is a multi-dimensional phenomenon, the social issues need to be addressed in addition to reducing income poverty.<sup>15</sup> BRAC, under the IDP, has aimed to create a more equal society through activities that raise awareness among people in terms of their rights and responsibilities and also teaches them to be more respectful towards the opposite gender. In this section we investigate whether there has been any significant improvement in peoples awareness level regarding social and legal issues.

## 10.1 AWARENESS ABOUT SOCIAL AND LEGAL ISSUES

The multidimensional nature of under-development insinuates the fact that people are not only deprived of economic opportunities but are also less knowledgeable regarding their rights and legal issues. The IDP aims to ensure access to legal services by introducing a number of awareness raising social events such as popular theatre, courtyard meeting etc. In order to assess the effect of the IDP on the knowledge of social issues such as correct age of marriage for boys and girls, age of voting, regulations of divorce etc. self-reported information was collected from the respondent women. We have analysed the effects on each indicator separately. Further an index was constructed taking all these indicators.<sup>16</sup>

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<sup>15</sup> The 2000/01 World Development Report and the Millennium Declaration in 2000 introduced poverty as a multidimensional phenomenon (Alkire and Foster 2011).

<sup>16</sup> The social awareness index has been constructed where seven indicators such as (i) know the legal age of marriage for boys, (ii) know the legal age of marriage for girls, (iii) are aware about the punishment for taking and giving dowry during marriage (iv) know the prerequisite for divorce (v) are aware about after how many days of notice divorce will be effective (vi) are aware about the eligible age for voting (vii) know about BRAC's Legal Aid Clinic have been used to measure the awareness of the respondents about various social and legal issues. For each indicator, we assign a value '1' for positive answer and '0' for negative answer. Then we have summed up total scores for each respondent, and divided by the total number of indicators. The value of the index lies from 0 to 1.

Table 10.1 reports the impacts of the IDP on awareness on social and legal issues. Findings show that the IDP succeeded in raising awareness about the legal age of marriage for girls which is crucial for combating early marriage ( $p < .01$ ). Relative to the non-intervention areas, a higher proportion of the women from intervention areas report that they are aware about the correct age of marriage (i.e. 18 years) for girls (increased by 21%) (column 3 of Table 10.1). Additionally, the IDP has succeeded in raising consciousness about the rules of divorce, and the pros and cons of exchanging dowry significantly as well ( $p < .01$ ). Similarly, the intervention has increased women's knowledge about voting age, various facilities available at BRAC office etc.

Results also show that the mean of the awareness index is 0.214 for non-intervention areas while for the intervention areas it is 0.28 ( $0.21 + 0.07$ ), indicating that overall awareness in the *haor* areas has increased ( $p < .01$ ). Despite the positive effects on awareness, as our findings show, the level of awareness in intervention area is still low after the IDP intervention.

**Table 10.1 | Impact on awareness about social and legal issues**

	Impact	Mean of outcome for non-intervention areas	Percentage change due to the intervention
Indicators: Knows about:	(1)	(2)	(3)
Legal age of marriage for boys (Yes=1, No=0)	-0.03 (0.02)	0.19	-15.96
Legal age of marriage for girls (Yes=1, No=0)	0.13*** (0.02)	0.62	21.26
Punishment for taking and giving dowry (Yes=1, No=0)	0.02*** (0.01)	0.02	115.79
Prerequisite for divorce (Yes=1, No=0)	0.03*** (0.01)	0.01	250.00
After how many days of notice divorce will be effective (Yes=1, No=0)	0.02*** (0.01)	0.01	228.57
Eligible age for voting (Yes=1, No=0)	0.08*** (0.02)	0.67	11.19
BRAC's Legal aid clinic (Yes=1, No=0)	0.23*** (0.02)	0.06	421.82
Awareness index	0.07*** (0.08)	0.21	31.78
Number of observation	4,674		

Note: \*\*\*, \*\*, \* denote significance at the 1%, 5%, and 10% levels respectively. The figures in parentheses are standard errors. Column (1) reports the impacts estimated of equation (1). That is, it reports the estimate of  $b$  of equation (1). Column (2) reports the mean of outcome variable for non-intervention areas. Column (3) reports the impact in percentage. Percentage change in outcomes due to the intervention are calculated as follows: divide the impact estimates (reported in column 1) by the mean of outcome for non-intervention areas (reported in column 2) and then multiply by 100.

Additionally, in Table 10.2, we have shown the impact of the intervention on access to legal supports and the incidences of sexual harassment. Findings show that the programme participants who deserve social safety net have decreased significantly, by 22 percentage points (29% decrease) (column 3 in Table 10.2). This implies that

programme intervention comparatively reduced vulnerability level of the *haor* dwellers ( $p < .01$ ). It is seen that, the tendency to seek help from local influential people (*morol/sardar*) has declined significantly by 7 percentage points (11.9% decrease) (column 3 of Table 10.2). Similarly, the incidence of facing sexual harassment among beneficiary community has been reduced significantly by 3 percentage points (150% decrease) (column 3 of Table 10.2).

**Table 10.2 | Impact on awareness and practice of human rights**

Awareness Indicators	Impact	Mean of outcome for non-intervention areas	Percentage change due to the intervention
	(1)	(2)	(3)
Know that HRLS gives legal support (Yes=1, No=0)	-0.03 (0.07)	0.44	-6.82
Received legal support (Yes=1, No=0)	0.00 (0.02)	0.01	0.00
Deserve Social Safety Net (Yes=1, No=0)	-0.22*** (0.02)	0.77	-28.57
Practice of early marriage (Yes=1, No=0)	-0.02 (0.06)	0.26	-7.69
Goes to Morol/Sardar for Salish (Yes=1, No=0)	-0.07*** (0.02)	0.59	-11.86
Faced sexual harassment (Yes=1, No=0)	-0.03*** (0.01)	0.02	-150.00
Number of observation	4,674		

Note: \*\*\*, \*\*, \* denote significance at the 1%, 5%, and 10% levels respectively. The figures in parentheses are standard errors. Column (1) reports the impacts estimated of equation (1). That is, it reports the estimate of  $b$  of equation (1). Column (2) reports the mean of outcome variable for non-intervention areas. Column (3) reports the impact in percentage. Percentage change in outcomes due to the intervention are calculated as follows: divide the impact estimates (reported in column 1) by the mean of outcome for non-intervention areas (reported in column 2) and then multiply by 100.

To further explore the communal strength in *haor* and effectiveness of the IDP, we now focus on the coverage of Development Support Group (DSG) initiative along with Village Development Organization (VDO). As Table 10.3 suggests, DSG is widely spread across all treatment regions and more importantly treated people are aware more about the services provided and have sought assistance from VDO at some point in last 3 years of IDP operation. In regard to VDO, though people are aware about this network, less people are directly participating in these meetings on a regular basis.

Table 10.3 | Impact on networking

	Impact	Mean of outcome for non-intervention areas	Percentage change due to the intervention
Development support group	(1)	(2)	(3)
Know about DSG (Yes=1, 0 otherwise)	0.65 (0.02)	0.10	650
DSG in your village (Yes=1, 0 otherwise)	0.60*** (0.02)	0.33	181.82
Know any DSG member (Yes=1, 0 otherwise)	0.08*** (0.05)	0.82	9.76
Got any support (Yes=1, 0 otherwise)	0.35*** (0.09)	0.26	134.62
Know about VDO (Yes=1, 0 otherwise)	0.80*** (0.01)	0.06	1333.33
Went to VDO meeting (Yes=1, 0 otherwise)	0.16 (0.11)	0.63	25.40
Number of observation	4,674		

Note: \*\*\*, \*\*, \* denote significance at the 1%, 5%, and 10% levels respectively. The figures in parentheses are standard errors. Column (1) reports the impacts estimated of equation (1). That is, it reports the estimate of  $b$  of equation (1). Column (2) reports the mean of outcome variable for non-intervention areas. Column (3) reports the impact in percentage. Percentage change in outcomes due to the intervention are calculated as follows: divide the impact estimates (reported in column 1) by the mean of outcome for non-intervention areas (reported in column 2) and then multiply by 100.

## 10.2 WOMEN EMPOWERMENT

One of the objectives of the IDP is to empower women. In order to assess the impact of the intervention on women empowerment, the survey collected information on respondent women's influence over household decision-making regarding purchase of household assets, investment, child education etc. Table 10.4 reports the impacts of the intervention on each of these indicators. Each indicator takes the value of 1 if the respondent woman has influence over the decision and zero if not. Additionally, we have also constructed an index taking all these indicators.<sup>17</sup>

<sup>17</sup> For measuring women empowerment, we have constructed an index using seven indicators. These indicators are related to women's influence/control over various decision regarding: (i) household's land purchasing, (ii) purchasing clothes for household member (iii) children's education (can decide how far their children should study) (iv) from where the household member would seek treatment (if sick) (v) how much they would spend on food expenditure (vi) how they would use household's savings (vii) where they would invest. For each indicator, we assign a value '1' for positive answer and '0' for negative answer. Then we have summed up total scores for each respondent, and divided by the total number of indicators. The value of the index lies from 0 to 1.

Results show that compared to non-intervention areas, the women from intervention areas have more influence over important household decision-making such as purchasing land, clothing, children educational, household members health and households food expenditures ( $p < .01$ ). The scenario of women's influence over their family decision among the *haor* community seems in concordance with the rest of the country. In 2014, it was reported in a national survey that about 87% of the decision regarding spending of income by family was determined jointly in which 54% of the decision were taken by females alone (BDHS 2016).

**Table 10.4 | Impact on women empowerment**

Women have influence/control over taking decision regarding (Singularly or jointly with husband)	Impact	Mean of outcome for non-intervention areas	Percentage change due to the intervention
(Yes=1, No=0)	(1)	(2)	(3)
Purchasing land	0.10*** (0.02)	0.72	14.27
Purchasing clothing for household members	0.13*** (0.02)	0.77	16.97
Children education	0.14*** (0.02)	0.85	16.84
Household members' treatment (if sick)	0.13*** (0.02)	0.85	14.86
Household's food expenditure	0.12*** (0.02)	0.84	14.20
Household investment	0.12*** (0.02)	0.71	17.26
Empowerment index (mean)	0.11*** (0.01)	0.81 (0.03)	13.69
Number of observation	4,674		

Note: \*\*\*, \*\*, \* denote significance at the 1%, 5%, and 10% levels respectively. The figures in parentheses are standard errors. Column (1) reports the impacts estimated of equation (1). That is, it reports the estimate of  $b$  of equation (1). Column (2) reports the mean of outcome variable for non-intervention areas. Column (3) reports the impact in percentage. Percentage change in outcomes due to the intervention are calculated as follows: divide the impact estimates (reported in column 1) by the mean of outcome for non-intervention areas (reported in column 2) and then multiply by 100.

### 10.3 CONCLUDING REMARKS

Despite the advantage of external validation of the data, quantitative information is limited in providing better understanding about the impact of the IDP on knowledge, awareness and practice. However, with this shortcoming in mind, in this section, we aim to explore the extent to which the IDP has succeeded to empower the *haor* community in regard to better knowledge about their rights as well as provide more gender sensitivity.

Evidence suggests that the IDP was able to raise awareness among people in regard to legal age for marriage, rules of divorce, dowry etc. Though people are found to be less knowledgeable about the HRLS programme after the intervention, the dominance of village *salish* has been significantly reduced. Similarly, the incidence of facing sexual harassment has also come down. The IDP has thrived in establishing a better communal network through DSG.

We also find that the IDP succeeded in raising awareness about the legal age of marriage for girls which is crucial for combating early marriage. Additionally, the IDP has succeeded in raising consciousness about the rules of divorce, the pros and cons of exchanging dowry. Similarly, the intervention has increased women's knowledge about voting age, various facilities available at BRAC office etc. We also find positive and significant impact of the programme on women empowerment.

CHAPTER ELEVEN

## IMPACT HETEROGENEITY AND ADDITIONAL STATISTICS

### 11.1 ARE THE IMPACTS LARGER FOR MORE DEPRESSED BASINS?

In this section, some suggestive evidences are presented on the heterogeneity of the impacts with regard to the intensity of depressed basins. As mentioned earlier, the *haor* areas can be classified as: deep *haor*, moderate *haor* and plain land. Table 11.1 reports the impacts of the intervention on key outcome variables, separately for deep *haor*, moderate *haor* and plain land areas.

Results show that for all the indicators reported in Table 11.1, the effects are larger for deep *haor* areas compared to plain lands. For instance, the intervention increased sanitary latrine use by 8 percentage points in plain land against 39 percentage points in deep *haor* areas ( $p < .01$ ). Same trends are observed for other indicators like women empowerment, per capita food intake and per capita food expenditure. As the descriptive statistics presented in Section 3.2 shows deep *haor* areas had higher level of vulnerability at baseline; support provided in those areas thus results a bigger change.

Table 11.1 | Impact heterogeneity

	Plain		Moderate		Deep	
	Impact	Mean of outcome for non-intervention areas	Impact	Mean of outcome for non-intervention areas	Impact	Mean of outcome for non-intervention areas
	(1)	(2)	(3)	(4)	(5)	(6)
Use sanitary latrine (Yes=1, No=0)	0.08***	0.84	0.33***	0.61	0.39***	0.4
Women empowerment index (mean)	0.09	0.88	0.08*	0.78	0.12***	0.70
Per capita food intake (gram/person/day)	41.12	1,072	58.18	905.8	85.35***	930.1
Per capita food expenditure (BDT/person/ day)	3.90	52.62	11.99***	30.40	8.168***	37.74

Note: \*\*\*, \*\*, \* denote significance at the 1%, 5%, and 10% levels respectively.

## 11.2 ARE THE IMPACTS DIFFERENT FOR NON-BORDERING VILLAGES?

The impact estimates reported in chapters 5-10 are based on samples taken from the bordering villages of intervention *upazilas* (i.e. villages that are located at the periphery of these *upazilas*) and villages from nearby non-intervention areas. In other words, results presented in chapters 5-10 show the effect of the IDP on households located at the periphery of the intervention areas. A central question is thus whether the programme impact is different for villages that are located in non-bordering areas. If so, then the impact results reported in chapters 5-10 are likely to be biased. In this sub-section, we provide some suggestive evidence that this is not the case. Table 11.2 shows that during baseline and follow-up, changes in key outcomes were similar across villages from border and centre of the intervention areas. For example, the amount of savings increased by 39.2% for bordering areas against 39.8% for central areas. For sanitary latrine use, bordering areas show a growth rate of 42% while for centre it is 43%. These results indicate that outcome variables changed almost equally for all parts of the intervention areas. Hence, the impact results presented using only bordering area sample are likely to represent results for all *haor* areas.

Table 11.2 | Changes in outcome for border and centre regions of the IDP area

Indicators	Border			Centre		
	Endline	Baseline	Difference	Endline	Baseline	Difference
Having savings (Yes=1, No=0)	52.99	13.79	39.2***	53.68	13.86	39.8***
Using sanitary toilet (Yes=1, No=0)	80.95	38.62	42.3***	88.52	45.96	43.3***
Use safe cooking water (Yes=1, No=0)	75.8	58.15	17.6***	82.76	67.87	14.9***
Use safe drinking water (Yes=1, No=0)	98.79	96.62	2.17***	98.94	95.4	3.54***
Using soap after toilet (Yes=1, No=0)	71.6	9.88	61.7***	80.64	8.49	72.1***
Having loan (Yes=1, No=0)	74.59	63.21	11.4***	70.47	62.66	7.82***

Note: \*\*\*, \*\*, \* denote significance at the 1%, 5%, and 10% levels respectively.

## 11.3 TO WHAT EXTENT THE IDP HAS REDUCED THE GAP IN OUTCOMES BETWEEN HAOR AND RURAL NATIONAL?

As reported in Table 11.3, after the IDP intervention, households from Derai and Baniachong have almost similar level of calorie intake compared to national (rural) average. This is perhaps possible because, as reported earlier in this paper, the IDP increased calorie intake (by about 70 kcal per capita per day). In 2012, sanitary latrine use at the national (rural) level was 56% which increased to 61% in 2015. By contrast, in the IDP intervention areas, the corresponding proportion increased from 48% to 87% in Baniachong and 47% to 84% in Derai, exceeding the national average. The dramatic increase in sanitary latrine use in Derai and Baniachong was due to the contribution of the IDP. However, in case of education, the gap between

intervention areas and rural Bangladesh is still very large. With regard to ANC, the IDP increased the coverage by 9 percentage points but the intervention areas are still lagging behind the national rural average.

**Table 11.3 | Status of socioeconomic indicators in national rural and IDP intervention areas**

Indicators	Baniachong		Derai		National-Rural		IDP contribution
	2013	2016	2012	2016	2012	2015	
Per capita food intake (kcal/per day)	-	2407	-	2378	2382.64	2458.88*	70 kcal
Per capita food exp. (BDT/person/day)	-	45.15	-	44.25	-	-	8 BDT.
Sanitation: Latrine with water seal	48	87.18	47	83.77	56	61**	34 percentage points
Underweight (girls under 5)	-	34	-	35	38.5	33.1	2 percentage points
Antenatal Coverage** (%)	-	42.69	-	37.12	54.9	65.4***	9 percentage points
Primary School Enrollment	88.47	90.26	86.91	89.61	96.7	97.7****	1.2 percentage points
Secondary School Enrollment	-	-	-	-	-	-	-

\* Source for national rural: HIES 2010; JMP 2015; BDHS Report 2016; BANBIES 2015

\*\* ANC is the percentage of last live births in the three years preceding the survey for which women received at least one ANC from a medically trained provider)

Note: \*\*\*, \*\*, \* denote significance at the 1%, 5%, and 10% levels respectively..

## 11.4 THE IMPACT OF THE IDP ON THE ULTRA POOR

One of the key objectives of the IDP is to reduce poverty and vulnerability of the *haor* dwellers, including ultra poor. In this section, thus, an effort is made to assess the effectiveness of the integrated approach on the ultra-poor section of targeted beneficiaries. Since the TUP programme addresses ultra poverty to assess the impact of the IDP on ultra poor, we provide an impact assessment of the IDP on the livelihoods of those that were covered by the ultra-poor programme under the IDP. We estimate the impact of the IDP on ultra poor by matching the households from intervention areas that received TUP intervention (either OTUP or STUP) through the IDP with households from non-IDP areas. The proper counterfactual group was identified using Propensity Score Matching (PSM) technique.<sup>18</sup> It needs to be mentioned

<sup>18</sup> Using PSM, we have developed two comparable group of households based on their respective observable characteristics. As reported in Appendix Table A2, the matching co-variates used here are- size of the household, sex, age, marital status, literacy, educational level of the household head, number of working age male and female member in each HH, distance between homestead and primary/secondary/government hospital/veterinary hospital etc. Total 414 treatment households (out of 417) and 2590 comparison households' (out of 2595) fall in on support region (Annex Table A3).

here that those who got support from the TUP programme under the IDP also got other supports from the IDP as the programme also delivers other support. For example, among the 417 households who got access to TUP programme under the IDP, about 29% households also received support from WASH, 14% and 9% households received support from agricultural expansion and microfinance, respectively.

Table 11.4 reports the impact of the IDP on ultra poor households based on selective indicators, such as whether the households own cow/goat/poultry, their per capita calorie intake (Kcal) as well as food expenditure, whether the households have savings and lastly, whether the households have sanitary latrine. Results show that the IDP significantly increased asset ownership of the ultra poor. Specifically, the proportion of households owning cow and goat increased by 25 percentage points. Per capita calorie intake increased by 114 kcal. Similarly, the proportion of households with cash savings increased by 40 percentage points. Dramatic improvement in sanitary latrine use among the ultra poor is also observed.

**Table 11.4 | Impact of the IDP on the livelihoods of ultra poor**

Indicators	Impact of TUP under IDP
	(1)
HHs have cow (Yes=1; No=0)	24.56***
HHs have goat (Yes=1; No=0)	24.81***
HHs have chicken (Yes=1; No=0)	24.61***
Per capita daily calorie intake (Kcal)	113.94***
Per capita daily food expenditure (BDT)	2.22**
HHs have savings (Yes=1; No=0)	40.00***
HHs have sanitary latrine (Yes=1; No=0)	35.24***
HH members use soap after using toilet (Yes=1; No=0)	30.00***

Note: \*\*\*, \*\*, \* denote significance at the 1%, 5%, and 10% levels respectively. \*significant at 10%.

## CHAPTER TWELVE

# CONCLUSION

In recent decades, Bangladesh rural economy has performed remarkably well in terms of agricultural and infrastructural development that fueled rural non-farm economy (Hossain and Bayes 2009) but this progress, however, has not been evenly distributed across the country. Pervasive poverty still persists in various remote inaccessible pockets of the country, especially in hard to reach areas. A Multiple Indicator Cluster Survey (MICS) conducted in 2009 by the UNICEF identified sixty out of 491 *upazilas* of the country as lagging far behind the others with regard to improvement in health and education indicators.

BRAC initiated a pilot programme titled Integrated Development Programme (IDP) in the depressed basins of Bangladesh. The first phase of the IDP was implemented in Baniachong and Derai *Upazilas* of Habigonj and Sunamganj districts respectively. The IDP is comprised of BRAC's Health, Nutrition and Population programme, Education programme, Community Empowerment programme, Human Rights and Legal Aid Services programme, Gender, Justice & Diversity programme, Water Sanitation and Hygiene (WASH) programme, Targeting the Ultra Poor programme, Microfinance programme, Adaptive Agriculture, Fisheries, Livestock and Poultry programme, and Safe Migration programme.

The aim of the pilot programme was two-fold: on one hand it aimed to deliver services in a more integrated fashion in the remote *haor* basin; and on the other hand it aimed to address the sustainability issue of large scale micro level interventions by replicating the integrated service delivery approach to other part of the country. The uniqueness of the IDP to individual programme based delivery is that under this programme, all services are managed and delivered by one single programme organiser (PO) through a common platform like a village development organization (VDO).

This paper provides an impact assessment of the IDP to understand the extent to which it has been successful in improving the lives of *haor* dwellers. Given the extensiveness of the intervention outreach we have specified the outcome indicators down to asset holding, employment and income, food security and nutritional status, health and hygiene, education, crisis coping and vulnerability, individual along with communal empowerment.

This study is based on the data from census conducted in 2012-2013, prior to initiation of the IDP, and follow-up survey conducted in January-February, 2016, almost three years after the inception of the intervention. Census information is available for intervention areas only while the follow-up survey conducted after the intervention covers both intervention and non-intervention areas.

Our findings show that, overall, the programme has made notable success in achieving its targets. First, in terms of the impact on livelihoods, there has been a visible shift towards self-employment from wage employment for both males and females. Second, greater occupational diversity with more supportive activities such as homestead vegetation has been observed. Third, it could also be observed that better economic opportunities have been translated into higher asset accumulation which could be expected to foster sustainable development. Fourth, community practice regarding sanitation and access to safe water has improved significantly which might lead to lower water related morbidity in *haor*. Fifth, we document large effects on food consumption. Finally, improved economic situation has been translated into social cohesion as now there is a stronger bond among people.

One of the most insightful impacts of the IDP has been in the realm of rural credit. Traditionally, households have been borrowing at an exorbitant interest rate from local moneylenders. The quality of financial market participation has improved, due to decreased dependence on moneylenders. The intervention under the IDP has generated stronger empowerment of women and greater awareness on legal issues. However the effect on education is smaller in magnitude possibly because educational support was not significantly different between treated and non-treated areas. Impacts seem to be larger in the most depressed basins relative to moderate *haor* and plain land areas.

By and large, the IDP as an approach to address under development of the perilous parts in depressed basins seems to have produced positive outcomes as reflected by food intake and health indicating whether such an approach can be applied to other poverty pockets of Bangladesh can be an explorative question.

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# ANNEXURES

Fig A1 | Derai *upazila* and surrounding area (Sample village coverage)

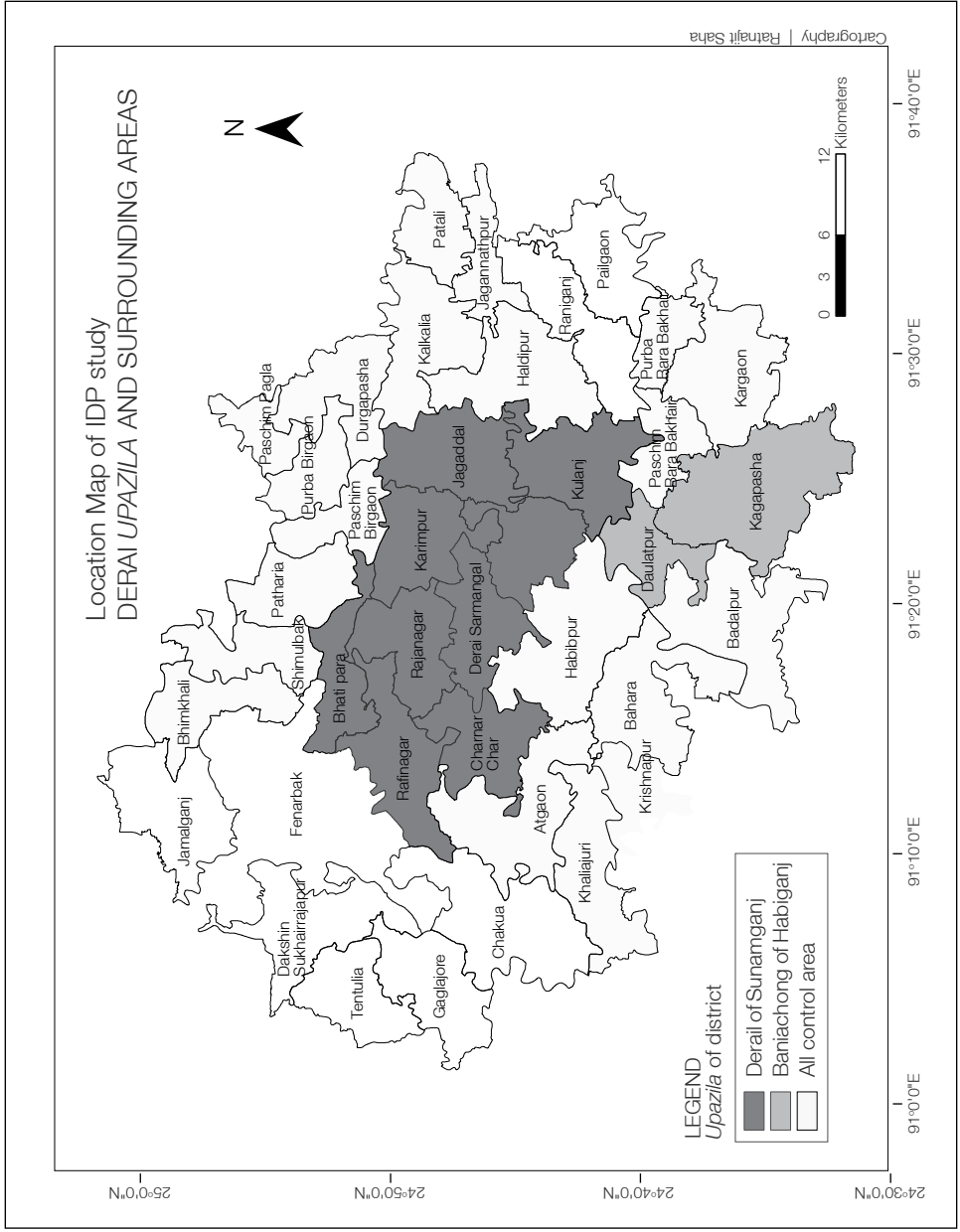


Fig A2 | Baniachong *upazila* and surrounding area (Sample village coverage)

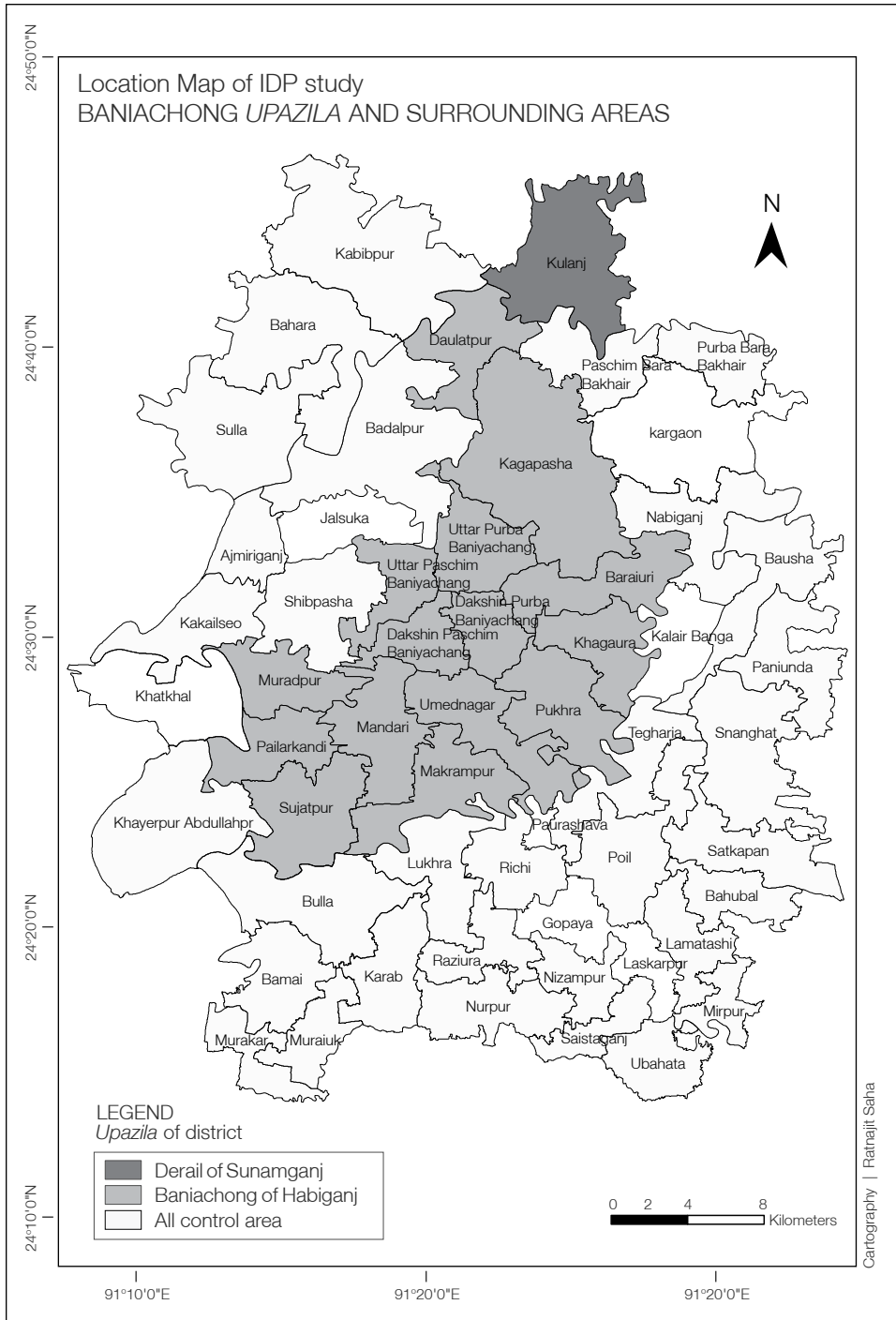


Table A1 | Accessibility to schools and local markets in *haor* area

	Accessibility in <i>haor</i> (travel time in minutes)	Treatment	Non-treatment
Government primary school	Monsoon	8.0	4.8
	Dry season:	7.1	5.0
Government high school	Monsoon	38.0	32.8
	Dry season:	41.6	42.7
BRAC school	Monsoon	14.4	11.0
	Dry season:	15.3	13.0
Local market	In monsoon:	39.8	29.1
	In dry season	46.1	37.2
Boat School (1=yes, 0 otherwise)	Knows about boat school	0.79	0.92
	Used boat school	0	0.04

Table A2 | Probit regression (TUP programme participants=1; Comparison households=0)

Indicators	Coefficient
Household size (mean)	-0.057***
Household head's age (mean/years)	0.004
Household head's sex (Male=1; Female=0)	-0.063
Household head's marital status (Married=1; Otherwise=0)	-0.305**
Household head can read and write (Yes=1; No=0)	-0.254*
Household head's education (years)	-0.035
Distance of primary school from household (km)	0.086*
Distance of secondary school from household (km)	-0.101***
Distance of Govt. hospital from household (km)	0.003
Distance of veterinary hospital from household (km)	0.058***
Number of working age male member	-0.145***
Number of working age female member	-0.117**
Constant	-0.164
Number of observations	3012
Pseudo R2	0.073

Note: \*\*\*significant at 1%, \*\*significant at 5%, \*significant at 10%.

Table A3 | Number of observations within common support

Observations	Off support	On support	Total
TUP households	3	414	417
Comparison households	5	2,590	2,595
Total	8	3,004	3,012

# About

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