Thailand and The World Economy
P-ISSN: 2630-0931
E-ISSN: 2651-0529
Homepage : https://www.tci-thaijo.org/index.php/TER
Vol. 44, No.1, January - April 2026 **Page [1-25]**

Effects of Microcredits and Social Safety Nets Programmes on the Poverty Reduction in the Haor Region of Bangladesh

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Received 16 July 2024, Received in revised form 1 December 2024,
Accepted 13 January 2025, Available online 5 January 2026

Abstract

The haor (Ox-bow Lake) region in Bangladesh, comprising seven districts, is rich in fishing, biodiversity, and boro-rice cultivation. However, its people are poorer due to wet monsoon seasonality. This study evaluates the joint impact of microcredit facilities and social safety net programs (SSNPs) on poverty alleviation and vulnerability reduction among Bangladesh's haor residents. This cross-sectional study gathered primary data from 907 households across 30 rural clusters (Union Parishads). It assessed the consequences of microcredit and SSNPs on poverty conditions using a 'before-after' comparison, coupled with respondents' perceptions and multiple binary logistic regression models. The analysis shows significant improvements in food security and socio-economic conditions among beneficiary households from 2019 to 2022. Overall food security increased remarkably, whereas severe and moderate food insecurity decreased remarkably. Extreme poverty decreased for beneficiaries but increased for non-beneficiaries. The study found that microcredit facilities and SSNPs improved living conditions, job opportunities, working hours, and asset protection. Model-based analysis showed that the likelihood of achieving non-poverty status increased 88% for full beneficiaries (received both SSNPs and microcredits), 56% for microcredit-receiving households, and 13% for SSNP beneficiaries. The probability of reducing hardcore poverty was greater for male-headed households and households with greater asset values, higher expenditure, many dwelling units, and educated heads. Hence, these factors also need to be considered besides extending microcredit facilities and SSNPs to reduce the haor areas' poverty. In conclusion, microcredit facilities and SSNP benefits can reduce poverty by generating income, and policymakers should increase the accessibility and implementation of these initiatives.

Keywords: Formal and Informal Microcredits, Social Safety Nets Programs, Impact Analysis, Multiple Logistic Regression, Haor Region; Bangladesh
JEL Classifications: I32, G21, H55, O15

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1. Introduction

The haor region covers 19,998 sq. km of land in six northeastern districts of Bangladesh (CEGIS, 2012), which are resourceful for fishing, biodiversity, and *boro*-rice cultivation. The food security condition of the haor people is miserable: 37.3% and 77.3% were food insecure based on calorie and protein intake, respectively (Chowdhury, 2014). The poverty rate is considerably higher in some haor districts in comparison to the national average (national average: 24.3% vis-à-vis Kishoreganj: 53.5%, Netrokona: 34.0%, and Sunamgonj: 26.0% (BBS, 2019). A study has documented that over 19 million people reside in the Haor region, and more than half of them are poor, marginal farmers (Chakraborty et al., 2020). Due to limited work opportunities during lean seasons, the people of the haor region are poorer than those residing in other parts of the country (Kazal et al., 2017), and the proportion of households with chronic poverty is also much higher in the haor region of Bangladesh (BBS, 2019; Chakraborty et al., 2020).

To further enhance Bangladesh's progress towards sustainable development, it is essential to address the persistent poverty in vulnerable regions, particularly the haor areas. Although Bangladesh's achievement of the Millennium Development Goals (MDGs) with respect to poverty reduction was remarkably high, many people of the haor region still fall below the poverty line. Achieving the Sustainable Development Goals (SDGs) requires a concerted, unified effort to effectively combat poverty. Strengthening social safety net programs is vital, as they play a key role in advancing SDG-1 (End poverty in all its forms everywhere) and SDG-2 (End hunger, achieve food security and improved nutrition, and promote sustainable agriculture). Eradicating extreme poverty is also a key principle in Bangladesh's Seventh and Eighth Five-Year Plans. Bangladesh's 8th Five-Year Plan aims to achieve SDG targets by 2024 by focusing on infrastructure development and reducing moderate and extreme poverty levels to 12.17% and 5.28%, respectively (GoB, 2020).

The impact of microcredit on different dimensions of poverty reduction is well-documented in several studies in other countries of the world (Chikwira et al., 2022; Félix & Belo, 2019; Khan et al., 2020; Sahu et al., 2021; Yin et al., 2023). Several researchers have also studied the link between microcredit access and empowerment (Akhter & Cheng, 2020; Hussain et al., 2019). For instance, Sahu et al. (2021) documented that microcredit considerably raises recipients' economic status and employability, underscoring the significance of credit consumption habits in India. A study in Pakistan found that access to Micro Finance Institutes (MFIs) and productive loans significantly contributes to poverty reduction (Khan et al., 2020). However, urban areas show larger average effects, with males having higher access to facilities. The study recommends improving rural microfinance institutions and promoting group lending to increase savers. By employing the OLS and Logit model of 458 poverty-stricken households, Yin et al. (2023) investigated the impact of micro-credit on farmers' income levels and the stability of income growth in China. The study findings show that micro-credit can increase income, stabilize growth, and have significant short-term and long-term effects. Based on secondary quarterly time-series data, a study examined the role of microfinancing in poverty alleviation by employing a Vector Error Correction Model in Zimbabwe (Chikwira et al., 2022) and found that microfinancing can increase poverty in the long run, while SMEs and agricultural development reduce it. Félix & Belo (2019) investigated the impact of microcredit on poverty reduction in 11 Southeast Asian developing countries using static and dynamic panel data models with data from 2007 to 2016. The findings indicate that microcredit plays a significant role in alleviating poverty,

highlighting that access to education and employment opportunities also contribute to poverty reduction. An analysis of relevant research across several countries reveals that, while microcredit alone may not completely eradicate poverty, it can make a meaningful difference in improving financial stability for disadvantaged communities.

Numerous research studies addressing the impact of social safety net interventions on poverty and vulnerability reduction globally have been identified (Adato et al., 2020; Andile, 2024; Graham, 2020; Msuha & Kissoly, 2024; Wang et al., 2021). Following a comprehensive desk review, Andile (2024) documented that SSNPs provide immediate relief and improve living conditions but lack long-term poverty reduction and economic mobility. The study suggests that a more integrated approach, combining SSNPs with broader development initiatives, may be more effective. Msuha & Kissoly (2024) examined the effects of the Productive Social Safety Net (PSSN) program on households' vulnerability to food insecurity (VFI) using data from Tanzania's 2017-18 Household Budget Survey. Their results indicate a notable reduction in VFI for households enrolled in conditional cash transfer (CCT) and public works (PW) components, supporting policies that advocate for an expansion of SSNs to alleviate food insecurity among the poorest households. Adato et al. (2020), in a conference summary on integrating safety nets, social protection, and poverty reduction strategies for Africa, documented that formal safety nets play a crucial role in mitigating chronic poverty and protecting livelihoods by redistributing resources to impoverished populations. Additionally, Wang & Gao (2021) analyzed social safety nets and poverty trends in East Asia, with a particular focus on Taiwan and Southeast China, revealing that while these interventions helped reduce poverty, regional disparities persisted. Overall, the literature review across various countries underscores that social safety net programs significantly contribute to reducing poverty and vulnerability.

In Bangladesh, people have access to both formal and informal microcredit sources. Despite debate regarding the induced benefits of microcredits, numerous studies have revealed the positive impact of microcredit on poverty alleviation and the livelihood of poor women in Bangladesh (Khandker 1998; Khandker & Samad, 2014; Khandker et al., 2015; Pitt & Khandker 1996; 1998; Pitt et al., 2006; Pomi, 2019). Research shows that informal microcredit often comes with rigid interest rates and unfavorable terms for borrowers (Islam et al., 2024). The impact of social safety net programs on the life and livelihood of the beneficiaries has been studied by many researchers (Ahmed et al., 2009; Begum et al., 2014; Asma et al., 2023; BIDS, 2018; Choudhary, 2013; Devereux, 2002; Hossain, 2020; Hossain et al., 2021a; 2021b; Begum et al., 2014; Hossain & Ahmed, 2017; World Bank, 2006; Zohir et al., 2010). Almost all of these studies have reported that SSNPs have a positive impact on reducing the vulnerability of the receiving households. The Household Income and Expenditure Survey 2016 of the Bangladesh Bureau of Statistics (BBS) reported that about a quarter of the total population has been brought under social safety net programs. The findings of the latest HIES 2022 revealed that the moderate and extreme poverty rates in the country decreased to 18.7% and 5.6% in 2022 from 24.3% and 12.9% in 2016. In the national budget of Bangladesh, the total amount allocated for SSNPs was taka 5006782 crore in the financial year 2013–24, which is 2.52% of GDP (Ministry of Finance 2022-23). Though the headcount rate of poverty has decreased during the last few decades, a very significant number of households have remained chronically poor.

While studies from different countries of the world, including Bangladesh, have examined the individual effects of microcredits and social safety nets on vulnerability reduction, research on their combined impact on poverty alleviation remains scarce. These research evaluations indicate that SSNPs have a definite positive effect on lowering poverty and vulnerability, as there are no repayment obligations for the benefits.

However, microcredit is not linearly beneficial for all credit receivers because unless the money is invested to generate revenue, microcredit is not profitable. Instead, although it reduces the transient vulnerability, the requirement to repay it in the future with additional interest becomes a burden in the long run. This can cause households to fall into a credit trap, thereby forcing them to sell valuable assets to overcome it. Since the haor region has low investment potential and the people have poor socioeconomic profiles, the net impact of microcredit on poverty reduction for haor people is unclear and poses additional risks such as asset depletion for credit receivers. All these make us question: What are the consequences of safety net benefits and microcredits in improving the food security condition and socioeconomic status of the households in the haor areas? Does microcredit help the haor people to combat poverty? What are the combined effects of microcredit and safety net benefits on reducing poverty? The study aims to answer these questions through a comprehensive investigation.

2. Materials and Methods

2.1 Study design, setting, and period

The research has adopted a cross-sectional study design to collect the required data and information on the outcomes of microcredit and social safety net programs in the haor region of Bangladesh. The study has conducted a household-level survey to gather ground-level data from 30 rural clusters (Union Parishads) in the haor region of Bangladesh. Study subjects included the household heads that received microcredit and SSNP benefits as well as non-beneficiary households. Study participants/respondents were recruited before the interview took place. The face-to-face interviews took place with study participants to collect retrospective data on microcredit and SSNP benefits they had received. Data were collected from October 2022 to September 2023. The Principal Investigator (PI) and concerned Field Investigator had access to information that could identify individual participants at the interviewing phase only. The identity of respondents was completely anonymous when data was released for analysis.

2.2 Sampling

The study has adopted a cluster-sampling method where haor-attached Union Parishads (UPs) were counted as clusters. The clusters were selected using the probability proportional to size (PPS) and systematic sampling procedures, where the 2011 census population at the Union Parishad was given as weights to obtain a balanced sample. This study has covered 30 clusters of the haor region of Bangladesh following the Expanded Program on Immunization (EPI) cluster sampling design of the World Health Organization (WHO) (Turner et al., 1996), where 30 clusters were regarded as the minimum number of clusters for a statistically representative sample from a population. The study prepared the list of clusters (haor-attached Union Parishads) of the haor region by separating the wetland area by using ArcGIS software and satellite images from USGS Earth Explorer. Different land covers (water, forest, grassland, and bare land) have been classified through supervised classification to find out the wetland upazilas and unions in northeastern Bangladesh.

2.3 Sample size determination

The study used the following formula to determine the sample size for the household survey:

$$n = \frac{p(1-p)Z^2}{(rp)^2} \times Deff$$

where n is the desired sample size, p is the indicator percentage (% of households covered by social safety net programs in Bangladesh), Z is the normal variate value at a 95% confidence interval, rp is the relative error margin, and *Deff* is the assumed design effect for cluster sampling. Based on a 28% indicator percentage, 95% confidence interval, 0.13 as relative precision, and highest response distribution with an assumed design effect of 1.5, the formula yielded that at least 585 beneficiary households are required to be covered for the study. According to the idealistic approach (Maxwell & Caldwell, 2008), 600 households are a statistically representative sample for estimating the level of food security of a population. To round up and align with the idealistic approach, the study increased the sample size from 585 to 600. In addition to the beneficiary sample households, a control group of 300 households was considered for assessing the impact of the microcredits and selected safety net programs. Therefore, the ultimate sample size for the study was 900, of which 600 (30×20) were beneficiary households and 300 (30×10) were eligible non-beneficiary households. As the units of analysis for the household survey were the beneficiary households (households covered by the microcredits and selected social safety net programs) as well as eligible non-beneficiary households, the study applied village mapping through Participatory Rural Appraisal (PRA) in each of the clusters to identify the beneficiary households.

2.4 Survey administration and data collection

The household survey was administered through a well-structured interview schedule (questionnaire). A consent form was incorporated into the interview schedule to ensure the ethical issues of the survey. The interview schedule covered the basic information of households: possession of materials and productive assets, profile of SSNP benefits, profile of microcredits, household's income and expenditure, consequences of benefits from SSNPs and microcredits, factors of raising resilience for poverty reduction, and a quick poverty scorecard. The household survey was conducted by 15 fieldworkers, who were graduate-level students of SUST. A 5-day training was held to discuss the technical aspects of the study and survey tools for data collection. The interview schedule was finalized after training and piloting. The study used smart devices and an ODK-based Kobo Toolbox platform to collect and store data electronically.

2.5 Conceptual framework

The people living in the haor region of Bangladesh suffer from chronic poverty due to its topology and disadvantageous features regarding livelihood opportunities throughout the year. In addition to the regional barriers, the households' chronic poverty condition is influenced by other factors associated with household amenities and assets. The SSNPs have played a vital role in reducing the vulnerability of the beneficiary households. Microcredits expand the recipient households' economic behavior and help alleviate the households' poverty condition. Separate studies discovered that SSNP benefits and microcredit help in reducing the poverty condition of households. However, the combined effects of SSNP benefits and microcredit are yet to be explored.

This study is executed to quantify the combined and partial effects of SSNP benefits and microcredit facilities on reducing the poverty condition of the haor people. The exploration of these two driving factors of mitigating poverty, along with other determinants, hopes to help the stakeholders to formulate appropriate policies to meet the development targets of the government of Bangladesh.

2.6 Data analysis

The study considered the status of the basic economic indicators of households, food security status, and self-assessed socio-economic conditions for the years 2019 and 2022 to make comparisons over time in line with the 'before-after' study design. Finally, the multiple binary logistic regression model was employed to study the combined impact of microcredits and SSNPs on graduation from poverty conditions. The logistic regression model is used when the dependent variable is dichotomous and is widely used to predict the likelihood of the binary response/dependent variable. This model has the advantage that it accommodates any combination of binary or numerical predictor variables. The multiple binary logistic regression model expressed in Eq. (1) was used to study the combined impact of microcredits and SSNP benefits on the households' non-poverty (hardcore) status. The dependent variable for this model was categorized as whether the households graduated from hardcore poverty conditions or not (graduated/nonpoor =1 and not graduated/poor =0). Aligning with the poverty measurement, this poverty condition has been assessed from the self-assessed food security condition of the households at two distinct time points, viz., 2019 and 2022. If the household suffered from moderate and severe food insecurity, the households were counted as hardcore poverty conditions. The study has considered the selected characteristics of households and household heads as covariates. The covariates for the multiple logistic regression model were selected by performing univariate analysis using χ^2 test and t-test for verifying the association between the outcome variable and categorical covariates and equality of two means for continuous variables, respectively.

The multiple logistic regression model with a set of p independent variables for a $X^{/}=(X_1, X_2, \ldots, X_p)$ can be expressed as

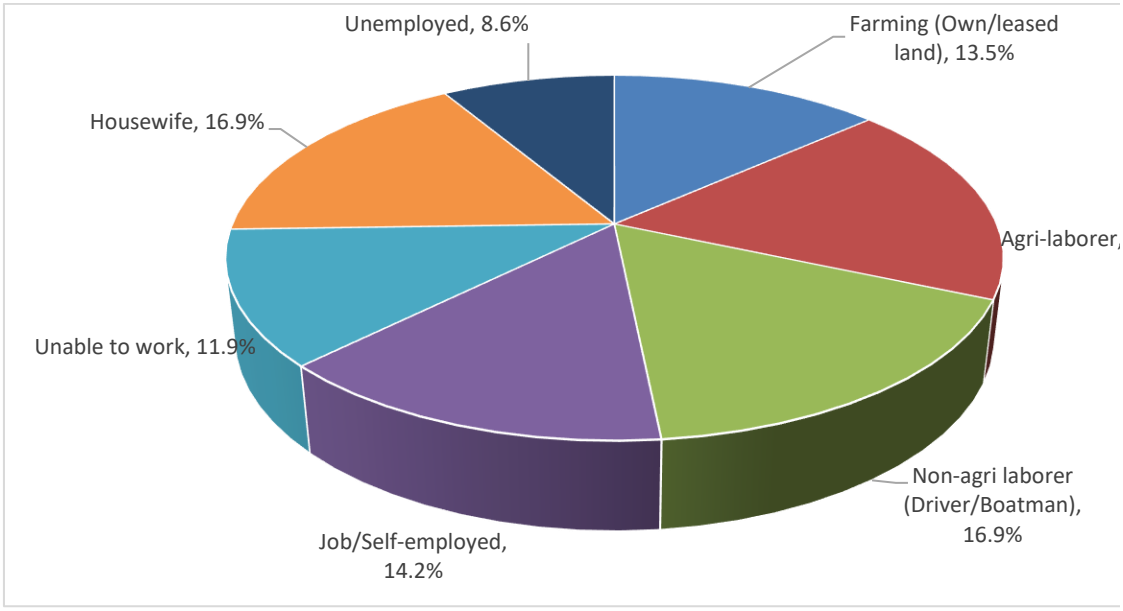
$$\log_e\left[\frac{\pi(X_i)}{1-\pi(X_i)}\right] = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \text{- - - - -} + \beta_p X_{pi} \quad \ldots\ldots\ldots (1)$$

3. Results and Discussion

3.1 Background profile of study households

Among the 907 surveyed households, 382 were found to receive benefits from both SSNPs and microcredits (full beneficiaries), 122 households were found to be partial beneficiaries of SSNPs, 130 were partial beneficiaries of microcredits, and 273 were non-beneficiary households (Table 3). About 92% of households were Muslim, and the rest were Hindu/Buddhist. The age distribution of the household heads shows that about 51.7 percent were middle-aged (31–50 years) and 31.6 percent were older people (more than 50 years). The average age of the household heads was estimated at 46.2 years, with a standard deviation of 14.3 years. The marital status of the household heads indicates that 81% were married, 15.7% were widowed/divorced/separated, and 3.2% were unmarried. The analysis of the educational attainment of the household heads demonstrates that 65.8% were illiterate, 26.9% obtained primary education, and only 7.3% achieved secondary or higher-level education (Table 3). The occupation of the household heads is shown in Figure 1. About 18% of household heads were found to engage as agricultural laborers and 16.9% as non-agricultural laborers. About 14% of household heads were employed in jobs/self-employment, 13.5% in farming (own/leased land), and 37.4% were unemployed/unable to work/housewives.

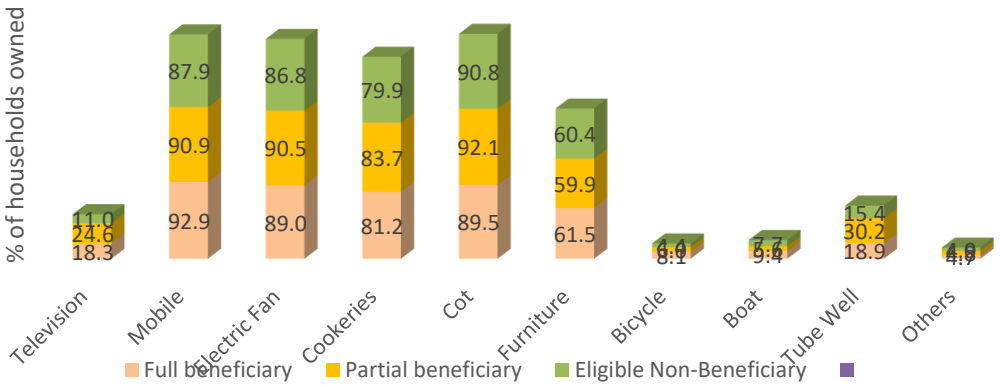
Figure 1: Occupation of the Household Heads



Source: Author's Summarization from Survey Data, 2023.

The distribution of households according to the ownership of durable assets (for consumption and/or production) is shown in Figure 2. The findings indicate that about 18% of households owned a television, 90.85% owned a mobile phone, 88.75% owned at least one electric fan, 90.63% owned a cot, 60.75% owned drawing room furniture, and 6.39% owned a bicycle. No remarkable variation in owning household durable assets was observed between full-beneficiary and partial-beneficiary households. However, eligible non-beneficiary households owned fewer assets than beneficiary households.

Figure 2: Ownership of Household Durables by Type of Households

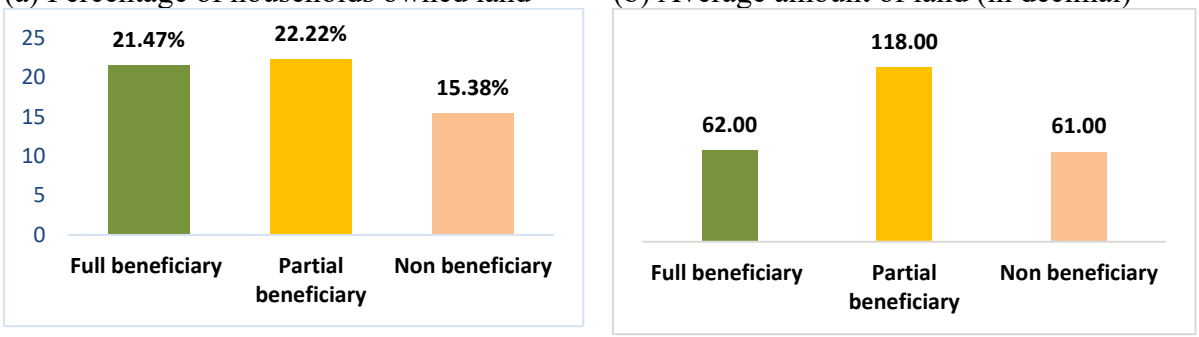


Source: Author's Summarization from Survey Data, 2023.

The findings showed that about 11% and 80% of the surveyed households had no homestead and agricultural land of their own. The average size of homestead and agricultural land is estimated at 4.81 decimals and 79.0 decimals. The succinct view of the ownership of agricultural land according to the types of households is shown in Figure 3.

Figure 3: Pattern of Ownership of Agricultural Land

(a) Percentage of households owned land (b) Average amount of land (in decimal)



Source: Author's Summarization from Survey Data, 2023.

The ownership of productive assets and values of properties by type of household are given in Appendix Table 1. Regarding the possession of productive assets (for income generation and production), the highest percentage of households were found to own cultivation equipment (41.68%), followed by cattle (29.66%), fishing nets (5.62%), sprayers (5.07%), engine boats (4.19%), etc. (Appendix Table 1) A few households were found to own sewing machines, autorickshaws, rickshaw vans, bee boxes, family businesses, etc.

The annual economic behavior of the study households according to the beneficiary status is shown in Appendix Table 2. The highest percentage (76.85%) of surveyed households was found to have income from labor sales, followed by off-farm activities (44.54%) and on-farm activities (40.57%). Aggregating all the sources of income, the annual average income was found to be slightly higher for partial beneficiary households (Tk.154223.44) than that of full beneficiary households (Tk.152920.76), as well as eligible non-beneficiary households (Tk.107603.96). The annual average expenditure was found to be slightly higher for partial beneficiary households (Tk. 157666.94) than that of full beneficiary households (Tk.154767.84), as well as eligible non-beneficiary households (Tk.112821.75). The findings indicate that both the income and expenditure of the surveyed households were remarkably lower than the national figure of Bangladesh (Tk.313956 in income and Tk.322104 in expenditure for rural areas), as reported by the recently conducted HIES 2022 (BBS, 2023). The findings are quite natural, as the surveyed households represent the poorest segments of the rural community, residing in the remote rural haor region of Bangladesh. Their lower amount of income is likely because they lie at the bottom of the decile distribution of income and expenditure in the country.

3.2 Profile of microcredits and SSNPs

3.2.1 Profile of microcredits

The sources of microcredits can be broadly categorized into formal and informal. The definition of formal and informal sources varies from country to country (Ernest, 2011). In this study, the formal sources included government and private banks and cooperatives, as well as different microfinance institutions, NGOs, and insurance companies that are regulated by the government directly or by an affiliated or authorized body such as the Microcredits Regulatory Authority, Bangladesh Bank, or Bureau of NGOs. The informal sources include (i) interest-bearing loans mainly from local moneylenders and private *samitees* (Association) and (ii) non-interest-bearing loans from relatives, friends, neighbours, and landowners. This study has considered interest-bearing microcredits only. Thus, the study restricts the informal sector to only borrowing from

local moneylenders and private *samitees*; and the formal sector includes microfinance institutions, government institutions, commercial banks, cooperatives, and NGOs.

It was found that the highest percentage of households (65.19%) borrowed money from non-government (MFI/NGO/insurance) sources, 29.27% of the households borrowed money from local moneylenders (Mahajan/private *samitees*), and about 6% borrowed money from government sources (banks/cooperatives). Combining government and non-government institutional sources, it was found that about 71% of the surveyed households had taken microcredit from formal sources, and the rest (29.27%) of the households borrowed money from informal sources. Though the formal sources of microcredit were found to dominate the rural credit market in the haor region, a significantly large portion of them still depend on informal credit.

Table 1 shows the profile of microcredits from three main sources. The average amount of loan for the surveyed households was found to be highest for non-government (MFI/NGO/insurance) sources (Tk.54,144.72), followed by government (banks/co-operatives) sources (Tk.51739.13) and local moneylenders (Tk.46,894.17). Estimating the interest rate on loan amounts proved challenging, with significant fluctuations observed across various loan types and terms. In certain instances, the interest rate was determined by the projected paddy yield for the upcoming season. Nevertheless, the study calculated an average interest rate by standardizing the differing interest terms to a consistent time period. The average interest rate was found to be Tk.2.67 per quarter (3-month period) for the microcredit taken from government sources. On the other hand, the average interest rate was found to be Tk.6.12 and Tk.28.02 per quarter for the microcredits taken from non-government and local moneylenders, respectively. The interest rates for microcredits from non-government sources showed a degree of consistency. Specifically, the 40 partner organizations of PKSF were reported to have charged an average effective annual interest rate ranging from 24% to 32% (Institute of Microfinance, 2015). Recently, microfinance institutions (MFIs) proposed a 12.75% flat interest rate for small loans, aiming to replace the existing rate of 24% (Dhaka Tribune, 2024). Mallick (2012), in a study of 156 villages across three northern districts in Bangladesh, recorded that the average annual interest rate charged by moneylenders was Tk.103.33, with a standard deviation of Tk. 59.06. Additionally, research on microcredit practices in the haor region highlighted key differences between formal and informal credit structures, particularly regarding collateral requirements, loan duration, amounts, interest rates, costs, and instalment structures (Asma et al., 2023).

In terms of microcredit repayment, the highest percentage of households (82.31%) who had taken loans from non-government sources actively participated in the refund process. It was found that 60% of the households that had taken loans from government sources and 74.24% of the households that had taken loans from local moneylenders participated in the refund process. The average refund of the principal amount was found to be highest for loans taken from non-government sources (Tk.20848.11), followed by government sources (Tk.7961.60) and local moneylenders (Tk.5969.39). Though the average return of the principal amount was found to be lowest for the microcredit from local moneylenders, the average return of the interest amount was highest for the households that took loans from local moneylenders (Tk.11304.17). The average unpaid amount of loans (principal) was also highest for households that took loans from local moneylenders, which might be due to the short duration of these loans.

Table 1: Profile of Microcredits

Issues	Government (Banks/ Co-operatives)		Non-government (MFI/NGO/ Insurance)		Local Moneylender (Mahajan/ Private Samittee)		Total
	N	Mean (Tk.)	N	Mean (Tk.)	N	Mean (Tk.)	Mean (Tk.)
Loan Amount	25	51739.13± 57724.44	294	54,144.72± 47145.88	132	46,894.17± 50405.81	51,889.26± 48448.42
Interest rate (Quarterly)	25	2.67	294	6.12	132	28.02	12.33
Paid Loan (Principal)	15	7961.60	242	20848.11	98	5969.39	16,196.24
Paid Interest	15	2785.07	240	2749.75	96	11304.17	5,090.93
Unpaid Loan (Principal)	14	18648.29	238	30475.88	95	41132.63	32,916.24
Unpaid Interest	13	1901.54	236	5476.05	92	45130.43	16,038.32

Source: Author's Calculation from Survey Data, 2023

3.2.2 Profile of SSNPs

The distribution of households according to the SSNPs is shown in Appendix Table 3. Of the 907 surveyed households, 504 households were found to receive benefits from SSNPs. Among the surveyed SSNP beneficiary households, 31.2% were found to receive benefits from the Vulnerable Group Development (VGD) program, 30.2% from Old Age Allowance (OAA), 19.1% received benefits from Allowance for Widowed and Destitute Women (AWDW), 9.9% from Primary Education Stipend Program (PESP), 7.7% from Allowance for Financially Disabled (AFID), 2.8% from Secondary Education Stipend Program (SESP), and the rest received benefits from RERMP, EGPP, etc. Among the 157 VGD beneficiary households, 127 (80.9%) were found to receive microcredits. The plausible explanation is that VGD beneficiary households received a handy benefit package for 24 months along with skill development training on IGA.

3.3 Consequences of microcredits and SSNP benefits on food security and socioeconomic conditions

Using a 'before-after' study design, this analysis compares key economic indicators—including food security and socioeconomic status—of selected households in 2019 and 2022 to assess the impact of specific social safety net programs (SSNPs) and microcredit on beneficiaries' livelihoods. Table 2 shows the percentage of households with perception-based food security and socioeconomic conditions in the years 2019 and 2022. The findings indicate that the food security situation of the study households has increased significantly over the period 2019 to 2022. The improvement was particularly pronounced for SSNP (partial) beneficiary households, with food security nearly doubling. In contrast, a little change (5.4%) was observed for microcredit (partial) receiving households. In the case of full-beneficiary households (recipients of both SSNP benefits and microcredits), the food security situation rose significantly from 26.7% to 41.9%. Meanwhile, eligible non-beneficiary households showed only a slight improvement of 2.6% in food security conditions.

The findings indicate that the severe food insecurity situation in terms of 'slept with hunger' has not changed remarkably over the period for all sections of the surveyed households. The most substantial gap in severe food insecurity was observed among eligible non-beneficiary households, rising from 17.6% in 2019 to 20.5% in 2022. On the contrary, the percentage of households with severe food insecurity situations was found to decrease for both SSNP beneficiaries and microcredit recipients. Overall, 10.9% of

households were found to suffer from severe food insecurity in 2022, a minute increase from 9.8% in 2019. On the brighter side, moderate food insecurity, indicated by households managing 'less than three meals a day,' declined significantly for both SSNP beneficiaries and microcredit recipients. In 2019, about 27% of full-beneficiary households were struggling to manage three meals a day, and this percentage decreased to 19.4% in 2022, suggesting improved food access among these groups.

The findings indicate that the food insecurity status in terms of 'some periods of hunger during the year' has decreased notably for the full beneficiary and SSNP beneficiary household cohorts but remained almost unchanged for microcredit recipients and eligible non-beneficiary household cohorts. In 2019, about 42% of full-beneficiary households were not able to have three meals a day throughout the year, and this percentage decreased to 33.8% in 2022. The findings clearly revealed that both SSNP benefits and microcredits have remarkably improved the food insecurity situation of beneficiary households, thereby reducing poverty.

Regarding the change in the self-assessed socio-economic condition of the households over the period 2019-2022, the findings indicate that percentages of households classified as 'extremely poor' decreased for full beneficiary, partial beneficiary (SSNP), and partial beneficiary (microcredit) households in 2022; however, the percentage of households classified as 'extremely poor' increased for eligible non-beneficiary households in the same period (Table 2). About 35% of full beneficiaries, 27.9% of partial beneficiaries (SSNP), 22.3% of partial beneficiaries (microcredit), and 31.1% of non-beneficiary households were 'moderately poor' in 2019. The findings indicate that the percentage of 'moderately poor' households decreased considerably for full beneficiary households over the period 2019-2022. However, the proportion of 'poor' households, rather than 'non-poor,' rose substantially across all household cohorts. The analysis concludes that while SSNP benefits have markedly reduced the vulnerability of beneficiary households, the progress has been limited in terms of lifting households out of poverty entirely, indicating room for further improvement in poverty graduation.

Several studies have reported almost similar results concerning the consequences of microcredits and SSNPs on food security and poverty conditions (Asma et al., 2023; Badhan et al., 2019; Mamun, 2019). In the char areas of Bangladesh, Badhan et al. (2019) found that after receiving allowances from SSNPs, food insecurity decreased from 77% to 68%. Another study highlighted that the old age allowance program positively affected rural elderly individuals by improving their access to food and calories, as well as enhancing their social standing within families and communities (Mamun, 2019). The positive impact of microcredits on poverty reduction has also been extensively documented in Bangladesh (Khalily et al., 2016; Khandker & Samad, 2014; Liton et al., 2014).

The bottom panel of Table 2 presents the percentage changes in gross income, total expenditure, health expenditure, and education expenditure from 2019 to 2022 across different household cohorts. The household income rose steeply (by 50% or more) over the 2019–2022 period for all types of households except eligible non-beneficiary households, whose income rose by 26.35%. Total expenditure also saw a substantial rise (50% or more) for all household types, with SSNP (partial) beneficiaries experiencing a higher increase (71.12%) compared to microcredit (partial) recipients (51.05%).

The findings indicate a noticeable decline in education expenditure across all household cohorts over this period, while healthcare expenditure rose significantly, with an overall increase of 35.82% among the surveyed households. These changes suggest that SSNP benefits and microcredit facilities positively impacted the household income and health expenditure of beneficiary households, contributing to improved economic stability.

Table 2: Consequences of SSNPs and Microcredits on Food Security and Socioeconomic Condition of Households

Indicators	Types of Households									
	Full Beneficiary		Partial Beneficiary (SSNP)		Partial Beneficiary (Microcredit)		Non-Beneficiary		Total	
	2022	2019	2022	2019	2022	2019	2022	2019	2022	2019
Food Security Condition (% of households)										
Normal	33.80	42.10	32.00	37.70	29.20	29.20	27.50	28.60	31.00	35.60
Moderate	19.40	27.20	29.50	36.10	20.00	24.60	20.50	24.90	21.20	27.30
Severe	5.00	3.90	11.50	12.30	7.70	8.50	20.50	17.60	10.90	9.80
No food insecurity	41.90	26.70	27.00	13.90	43.10	37.70	31.50	28.90	36.90	27.20
Socioeconomic Condition (% of households)										
Very poor	8.10	11.80	24.60	34.40	10.80	13.10	28.20	26.70	16.80	19.50
Moderately poor	23.80	34.60	27.90	27.90	21.50	22.30	21.20	31.10	23.30	30.90
Poor	56.30	46.90	41.80	34.40	54.60	53.80	45.80	39.20	50.90	43.90
Middle class	11.80	6.80	5.70	3.30	13.10	10.80	4.40	2.60	8.90	5.60
Rich	0.00	0.00	0.00	0.00	0.00	0.00	0.40	0.40	0.10	0.10
Percentage change of economic indicators over 2019-2022 period										
Total expenditure	53.71		71.12		51.05		64.73		50.17	
Gross income	51.95		68.47		79.13		26.35		48.37	
Education expenditure	(71.88)		(17.29)		(59.66)		(61.86)		(62.63)	
Health expenditure	23.24		42.93		41.92		48.36		35.82	

Source: Author's Calculation from Survey Data, 2023

3.4 Impact of microcredits and SSNP benefits on household's poverty condition

The study utilized a multiple binary logistic regression model to assess the impact of microcredits and SSNP benefits on household food security or non-poverty (hardcore) status. In Bangladesh, the "absolute poor" is defined as having a minimal daily calorie intake of 2,122 kcal. A person who does not earn enough money to fulfill even a 1,805 calorie energy intake is referred to as "hard-core poor" (WFP, 1997). The World Food Program (WFP) defines the 'ultra-poor' as individuals who do not consume more than 1600 calories per day. Hossain (2020) reviewed various methods for assessing food insecurity and poverty, concluding that poverty rates vary depending on the chosen assessment method.

Due to the complexity of data collection through the direct calorie intake (DCI) method, this study considered the data on food security status to study the impact of microcredits and SSNP benefits on the poverty status of the household. The study has collected data on the food security status through the perception of the household heads to four distinct questions related to degrees of food security: severe (slept with hunger), moderate (bound to take less than three meals in a day), normal (anxious about food shortage), and no food insecurity (not anxious about food shortage).

To study the impact of microcredits and SSNP benefits on the poverty status of the household, this study re-categorized the household's food insecurity status into two groups: Not suffered from moderate or severe food insecurity (may be referred to as 'not hardcore poverty') and suffered from moderate or severe food insecurity (hardcore poverty). The study has used the multiple binary logistic regression model to study the impact of microcredits and SSNP benefits on the food security or the non-poverty (hardcore) status of the household. Considering binary dependent variables as non-poverty (hardcore) =1 and hardcore poverty =0, the study developed the model taking into consideration several covariates in addition to the beneficiary status of the households (either SSNP benefits or microcredit facility or both).

3.4.1 Bivariate Analysis

The study has performed cross-tabulation between poverty (hardcore) status and categorical variables to select the relevant covariates for the multiple binary logistic regression model. The values of chi-square were computed, and the significance levels were verified to select the covariates. On the other hand, t-tests were performed to verify whether the difference between poverty and non-poverty (hardcore) status was significant for the continuous variables. Table 3 shows the findings of the bivariate analysis between poverty conditions (categorized as hardcore poor and non-poor) and several attributes of the study households. Based on chi-square statistics, the bivariate analysis indicated a significant association between poverty conditions and beneficiary status of households (received both SSNP benefits and microcredit facilities or any one of these issues). In addition, a significant association was found for the gender of the household head, occupation of the household head, education of the household head, total expenditure, total asset values, and number of dwelling units with the poverty condition. On the other hand, the values of t-statistics indicated that the poverty condition varied significantly for the age of the household head, family size, and landholdings.

The analysis showed that the proportion of full beneficiary households (received both microcredits and SSNPs) was significantly higher in non-poor households (46.92%) than in hardcore poor households (31.96%) (Table 3). The findings indicate that the proportion of female-headed households was significantly higher in hardcore poor-group households (38.5%) than in non-poor households (22.73%). The proportion of farmer households was found to be higher in non-poor households (16.07%) in comparison to hardcore poor households (7.90%), but the difference was not found to be statistically

significant. On the other hand, the proportion of households whose heads were 'unable to work/housewife/unemployed' was found significantly higher in hardcore-poor households (46.74%) than in non-hardcore-poor households (32.40%). The education of the household heads was found to have a significant association with the poverty condition. The proportion of households whose heads achieved primary or higher-level education was found remarkably higher in non-hardcore poor households (37.18%) than that of hardcore poor households (27.83%), but the difference was not found statistically significant. However, the proportion of illiterates was found significantly higher in the hardcore-poor group than in the non-poor group. The annual expenditure and values of total assets (used in production) were found to be significantly associated with the poverty condition of the households. The percentage of households with annual expenditure 'below Tk.100,000' was found to be significantly higher in the hardcore poor households (49.48%) in comparison to the non-poor households (35.55%). Similarly, the percentage of households with marginal asset values (Tk.5000 or less) was found to be significantly higher in the hardcore poor households in comparison to the non-poor households. The percentage of households with single dwelling units was found significantly higher in the hardcore poor households (50.17%) in comparison to the non-poor households (37.01%). The ownership of television was found to have an insignificant association with the poverty condition of the households. The analysis indicates that the average age of the household head, average family size, and average land size vary significantly across the poverty conditions of the households. The average age of household heads was found significantly higher for poor households than for non-poor households. On the other hand, average family size and average land size were found to be higher in non-poor households than in poor households.

Table 3: Bivariate Analysis Between Poverty Condition and Several Household Attributes

Selected Covariates with Categories	Total [N (%)]	Poverty Condition		Chi-square value	p-value
		Poor [N (%)]	Non-poor [N (%)]		
Beneficiary Status of Household					
Full beneficiary	382 (42.12)	93 (31.96)	289 (46.92)	26.10	0.00*
Partial beneficiary (SSNP)	122 (13.45)	50 (17.18)	72 (11.70)		
Partial beneficiary (Micro-credit)	130 (14.33)	36 (12.37)	94 (15.26)		
Eligible Non-Beneficiary	273 (30.10)	112 (38.50)	161 (26.14)		
Gender of Household Head					
Male	655 (72.22)	179 (61.51)	476 (77.27)	24.47	0.00*
Female	252 (27.78)	112 (38.50)	140 (22.73)		
Occupation of Household Head					
Farmer	122 (13.45)	23 (7.90)	99 (16.07)	23.69	0.00*
Laborer	317 (34.95)	101 (34.71)	216 (35.06)		
Service	129 (14.22)	31 (10.65)	98 (15.91)		
Others (Unable to work, Housewife, Unemployed etc.)	339 (37.38)	136 (46.74)	203 (32.40)		
Education of Household Head					
Illiterate	597 (65.82)	210 (72.16)	387 (62.82)	8.11	0.02*
Primary	244 (26.90)	66 (22.68)	178 (28.90)		
Secondary +	66 (7.28)	15 (5.15)	51 (8.28)		

Selected Covariates with Categories	Total [N (%)]	Poverty Condition		Chi-square value	p-value
		Poor [N (%)]	Non-poor [N (%)]		
Annual Expenditure of Household (in BDT)					
Below Tk.100000	363 (40.02)	144 (49.48)	219 (35.55)	16.08	0.00*
Tk.100000 – Tk.199999	387 (42.67)	103 (35.40)	284 (46.10)		
Tk.200000 or more	157 (17.31)	44 (15.12)	113 (18.34)		
Value of Total Assets used in Production (in BDT)					
No Asset value	292 (32.19)	98 (33.68)	194 (31.50)	19.45	0.00*
Tk.5000 or less	395 (43.55)	146 (50.16)	249 (40.42)		
Tk.5001 - Tk.25000	116 (12.79)	31 (10.65)	85 (13.80)		
Tk.25001 or more	104 (11.47)	16 (5.50)	88 (14.29)		
Number of Rooms					
Single	374 (41.23)	146 (50.17)	228 (37.01)	17.88	0.00*
2	365 (40.24)	109 (37.46)	256 (41.56)		
3 or more	168 (18.52)	36 (12.37)	132 (21.43)		
Ownership of Television					
No	745 (82.14)	247 (84.88)	498 (80.84)	2.19	0.14
Yes	162 (17.86)	44 (15.12)	118 (19.16)		
		Average values (SD)		t-value	
Age of Household Head	46.20 (14.30)	47.36 (15.51)	45.59 (14.02)	1.72	0.08
Family size	5.22 (2.32)	5.03 (2.30)	5.31 (2.33)	-1.74	0.08
Landholdings	20.30 (64.65)	14.19 (30.98)	23.19 (75.36)	-1.91	0.05

Source: Author's Calculation from Survey Data, 2023

3.4.2 Multivariate analysis

Based on the findings of bivariate analyses, the models consider the covariates – beneficiary status of households (received both SSNP benefits and microcredit facility or any one of these issues), age of household head, gender of the household head, occupation of the household head, education of the household head, total expenditure, family size, landholdings, total asset values, and number of rooms in household. The multiple binary logistic regression model was found to fit significantly based on all available tests, including the Hosmer and Lemeshow test (p-values are 0.782). The estimated regression coefficients, associated statistics, and odds ratios from the multiple binary logistic regression model for evaluating the impact of microcredits and SSNP benefits on the non-poverty (hardcore) status of the household are shown in Table 4. The results indicate that the beneficiary status of households, gender of the household head, education of the household head, total expenditure, family size, total asset values, and number of dwelling rooms in the household have a significant effect on the household's non-poverty (hardcore) status. On the other hand, the age of the household head, occupation of the household head, and landholdings were found to have insignificant effects on the non-poverty (hardcore) status of the household in the binary logistic regression model.

The estimated values of the coefficients of the multiple binary logistic regression model indicate that the beneficiary status (either SSNP benefits or microcredit facility or both) of the household level had a significantly positive impact on the non-poverty (hardcore) status or food security condition of the household. The likelihood of non-poverty (hardcore) status of the household was found to increase by 1.88 times higher for the full beneficiary (received both SSNP benefits and microcredit facility) households in comparison to the eligible non-beneficiary households. In addition, the likelihood of non-

poverty (hardcore) status was found to increase by 13% and 57% for the SSNP (partial) and microcredit (partial) households in comparison to non-beneficiary households. The reasoning for this finding is straightforward: since SSNP benefits reduce vulnerability and microcredit widens access to income generation, the non-poverty condition of the households is improved. Previous studies (Ahmed et al., 2009; Asma et al., 2023; Badhan et al., 2019; BIDS, 2018; Choudhary, 2013; Devereux, 2002; Hossain et al., 2021c; Khuda, 2011; Mamun, 2019; World Bank, 2006) have shown that SSNP facilities considerably lower poverty in recipient families; nevertheless, data related to the percentage change of poverty condition is scarce. These studies have suggested extending the SSNPs to accommodate all intended recipients, with criteria-based, unbiased selection. Studies dealt with the impact of microcredits on poverty reduction; studies (Khalily et al., 2016; Khandker & Samad, 2014; Liton et al., 2014) have shown diversified results. For instance, Khalily et al. (2016) documented that microfinance institutions in Bangladesh have significantly reduced rural poverty by about 10% over two decades and lifted 2.5 million people out of poverty in that period. On the other hand, it has been reported that the rural poverty rates remain high, but those with access to microcredit perform better, indicating a marginally beneficial effect on reducing poverty (Liton et al., 2014).

The negative estimated value of the coefficient of the gender of the household head indicates that the likelihood of non-poverty (hardcore) status of the household was found to decrease by 37% for female-headed households in comparison to male-headed households. It is documented that female borrowers benefit more from microcredit initiatives than male borrowers in Bangladesh (Khandker & Samad, 2014). The reason for not graduating from the poverty condition for female-headed households living in the haor region may be that there is a lack of earning members in those households and limited scope to be involved with any IGAs. The education of the household head was found to have a positive impact on the non-poverty (hardcore) status of the household. In comparison to illiterates, the likelihood of non-poverty (hardcore) status was found to increase by over 40% for the households whose heads had primary or higher-level education. In a study, Bilenkisi et al. (2015) found that the risk of poverty decreased with the increase of the household head's educational level. The family size was found to have a negative effect on graduating from the poverty condition. The non-poverty (hardcore) status of the household was found to decrease by 0.078 units as the one-unit increase of the family size. Both the total expenditure and value of productive assets of the households were found to have a positive impact on the non-poverty (hardcore) status of the household. The possibility of non-poverty (hardcore) conditions was found 2.09 times higher for the households with asset values of Tk.25001 or more in comparison to the households with negligible assets. The findings further suggest that the number of dwelling units in the household had a positive correlation with the non-poverty (hardcore) status of the household. The likelihood of non-poverty (hardcore) conditions was found to be 2.11 times higher for the households with 3 or more rooms in comparison to the households with single dwelling units.

The findings revealed that graduation from hardcore poverty conditions was influenced by several household and individual characteristics along with microcredit and SSNP beneficiary status. The chance of graduation from hardcore poverty conditions was found to be remarkably higher for microcredit beneficiaries than SSNP beneficiaries. The reason is that the economic condition of SSNP beneficiary households is relatively more vulnerable than microcredit-receiving households.

Table 4: Estimated Regression Coefficients and Associated Statistics of Multiple Binary Logistic Regression Model

Category	B	S.E.	Wald	df	Sig.	Exp(B)
Beneficiary status of Households						
Non-beneficiary (ref.)	-	-	-	-	-	1
Full-Beneficiary	0.632	0.182	12.034	1	0.001	1.881
SSNP (partial)	0.125	0.238	0.277	1	0.598	1.133
Microcredit (partial)	0.450	0.247	3.305	1	0.069	1.568
Age of Household Head	-0.005	0.006	0.887	1	0.346	0.995
Gender of Household Head						
Male (ref.)	-	-	-	-	-	1
Female	-0.461	0.209	4.855	1	0.028	0.630
Occupation of Household Head						
Farming (ref.)	-	-	-	-	-	1
Labourer	-0.389	0.282	1.903	1	0.168	0.678
Service	-0.128	0.329	0.152	1	0.697	0.880
Others	-0.452	0.298	2.301	1	0.129	0.636
Education of Household Head						
Illiterate (ref.)	-	-	-	-	-	1
Primary	0.366	0.192	3.611	1	0.057	1.441
Secondary Plus	0.339	0.341	0.984	1	0.321	1.403
Total Expenditure						
Below Tk.100000 (ref.)	-	-	-	-	-	1
Tk.100000 – Tk.199999	0.382	0.183	4.334	1	0.037	1.465
Tk.200000 or more	0.229	0.280	0.671	1	0.413	1.258
Family Size	-0.078	0.043	3.304	1	0.069	0.925
Total Landholdings	0.001	0.002	0.127	1	0.722	1.001
Value of Total Assets used in production						
No Asset value (ref.)	-	-	-	-	-	1
Tk.5000 or less	-0.119	0.187	0.406	1	0.524	0.888
Tk.5001 - Tk.25000	0.184	0.269	0.467	1	0.494	1.202
Tk.25001 or more	0.739	0.313	5.572	1	0.018	2.093
Number of Rooms						
One or Less (ref.)	-	-	-	-	-	1
Two	0.225	0.175	1.663	1	0.197	1.253
Three or More	0.748	0.263	8.117	1	0.004	2.113
Constant	0.975	0.454	4.599	1	0.032	2.650
-2 Log likelihood=1052.20; Cox & Snell R Square=0.091; Nagelkerke R Square= 0.127 Hosmer and Lemeshow Test: Chi-square=4.773 (df=8); P-value=0.782						

Source: Author's Calculation from Survey Data, 2023

4. Conclusions

Reflecting on the questions that the study sought to answer, it includes determining the solo, as well as the dual, impact of safety net benefits and microcredits on graduation from poverty conditions alongside the consequences on food security conditions and socioeconomic status of the households in the haor areas.

During the study period, beneficiary households experienced improvements in food security status (both severe and moderate food insecurity decreased) and self-assessed socioeconomic conditions. The percentage of 'extremely poor' households decreased for all beneficiary groups but increased among non-beneficiary households. Significant improvements in the food security condition, socioeconomic status, income, and health expenditure during the study period among beneficiaries might be due to their inclusion in the SSNPs and microcredit facilities.

The bivariate analysis revealed that beneficiary status of households (either received SSNPs or microcredit facility or both); age, gender, occupation, and education of the household head; expenditure; family size; landholdings; asset values; and number of dwelling units in households varied significantly according to the poverty condition of the households, and these variables were included in the model. The model-based analysis revealed that the likelihood of non-poverty (hardcore) status of the household nearly doubled for the full beneficiary (received both SSNP benefits and microcredit facility). For microcredit (partial) households, the increase was more than half of that of full beneficiary households, whereas it was nearly one-seventh for SSNP (partial) households. The likelihood of escaping poverty is greater for households with higher asset values, expenditure, and number of dwelling units. The households whose heads have higher education and are male also escaped poverty relatively better. These indicate that these factors need to be targeted more in order to improve their poverty condition.

Despite the significant reduction in vulnerability due to SSNP benefits and the microcredit facility, it remains insufficient to lift households out of poverty.

4.1 Recommendations

The study's findings suggest an urgent need to increase institutional microcredit facilities and expand social safety net benefits in the haor areas of Bangladesh to alleviate poverty. The government's microcredit facility needs to be made easier and expanded to remote rural areas of the haor region with relaxed terms and conditions. Additionally, to protect against high-interest debt traps, informal microcredit sources should be curtailed. Regulatory measures should be implemented to identify and penalize predatory private creditors, and awareness campaigns should educate haor residents on safer financial alternatives. These initiatives would enable residents to make informed financial decisions, take calculated risks, build savings, retain valuable assets, and undertake ventures that drive sustainable livelihoods.

Revising interest rates for existing microcredit programs from non-government sources (MFIs, NGOs, and insurance providers) in the haor region is also crucial. Lowering these rates would ease repayment burdens, leading to better returns on both principal and interest, thereby improving the financial stability of borrowers. Furthermore, scaling up SSNPs—through increased budget allocations and extended support during lean seasons—would provide essential relief when household incomes are lowest.

Given the strong interlink between the socioeconomic condition of the households and graduation from poverty conditions, economic improvements for haor residents are

essential for sustainable poverty reduction. Tailored income-generating activities (IGAs) could provide long-lasting community benefits. For instance, female-headed households can be provided with sewing kits, hand looms, or other handicraft tools, whereas male-headed households can be provided with fishing nets, boats, or other revenue-generating equipment. Besides the technical support, the skills development training programs and literacy enhancement programs for the haor people need to be strengthened so that they can undertake any IGAs competently. When the knowledge is combined with skills and equipment, the investment potential of the region will increase. For this, the government can partner with private organizations that provide apprenticeships or vocational training under experts. If implemented, it will diversify the job opportunities in the haor region, making them less vulnerable to environmental challenges.

In addition, a new action plan needs to be undertaken and implemented following a 'nature-based solution.' This includes seasonal fish farming in cages, cultivation of diversified crops with climate-smart technology, development of eco-friendly tourism industry, etc. in the haor region. For example, expanding ecotourism could attract private investment, spurring infrastructure development and job creation. The tourism sector could open roles as tour guides, construction workers, hotel staff, and restaurant personnel, thus providing diverse employment opportunities and promoting long-term economic growth in the haor region.

4.2 Ethical Approval and Consent for Data Collection

The study was approved by the Ethical Review Committee, School of Physical Sciences, Shahjalal University of Science & Technology, Sylhet-3114, Bangladesh (Research Project Number: DPS/115/04/A). Ethical issues were duly considered at each stage of the study. Both written and verbal consent were taken from each participant before initiating the interview for data collection.

It is to be mentioned that the data were collected through the ODK-based Kobo Toolbox platform using smart devices. The respondents are asked to carefully read the consent form, and if they agreed, put the tick mark to continue the interview. For illiterate or poorly educated respondents, the consent form was read by the interviewer, and the interview was continued if the respondents provided their permission spontaneously. The consent form was an integral part of the survey questionnaire, which was placed at the beginning of the questionnaire. In the consent form, a brief introduction on the aims and objectives of the study was given first, and each of the respondents was assured regarding the confidentiality and privacy of information. It also stated that the information would be used only for research purposes, their participation was fully voluntary, and if intended to, they may completely withdraw from this survey. Only participants who consented were finally included.

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Appendix

Table 5: Ownership of Productive Assets and Values of Properties by Type of Households

Assets	Type of Households							
	Full beneficiary		Partial beneficiary		Eligible Non-Beneficiary		Total	
	% of total HHs	Mean value (Tk.) ± SD (Tk.)	% of total HHs	Mean value (Tk.) ± SD (Tk.)	% of total HHs	Mean value (Tk.) ± SD (Tk.)	% of total HHs	Mean value (Tk.) ± SD (Tk.)
Cultivation equipment	43.46	1625±2345	38.89	1726±1812	41.76	1059±842	41.68	1480±1882
Cattle	30.63	33761±40469	32.54	22610±27803	25.64	27743±29812	29.66	28796±34555
Rickshaw/ van	1.31	21400±16041	1.98	19800±17541	1.10	16000±16523	1.43	19538±15441
Auto-rickshaw	3.40	51154±38447	3.57	52111±82364	2.20	104167±85549	3.09	62821±67126
Sprayer	6.02	4022±3446	5.56	4857±3483	3.30	5667±3041	5.07	4598±3372
Fishing nets	6.02	1491±1609	4.37	1636±1639	6.23	1747±1790	5.62	1608±1648
Bee box	3.14	6417±2204	3.97	6350±2082	1.83	3800±1956	2.98	5907±2279
Sewing machine	4.19	4938±2744	4.76	5917±4252	2.20	4667±1033	3.75	5235±3144
Engine	6.02	70087±97309	3.57	51778±80512	2.20	138333±122909	4.19	76526±99335
Family Business	4.45	94412±135875	2.38	21250±15632	4.76	36231±38164	3.64	61208±100075
Total number (N)		382		252		273		907

Source: Author's Calculation from Survey Data, 2023

Table 6: Annual Economic Behaviour of the Study Households According to the Beneficiary Status

Expenditure heads & income sources	Average amount (in Tk.) and number of households involved by type of HHs							
	Full Beneficiary		Partial Beneficiary		Non-Beneficiary		Total	
	Mean	N	Mean	N	Mean	N	Mean	N
Food/consumables	92,334.03	382	174,480.10	251	85,920.00	273	113,159.23	906
Non-food consumables	15,038.87	355	17,130.97	234	12,101.18	255	14,731.34	844
Education	19,973.29	277	40,253.16	158	24,592.26	155	26,617.63	590
Healthcare	10,529.82	379	15,122.18	248	10,566.17	266	11,816.00	893
Agriculture	26,146.67	150	25,536.78	87	18,793.10	87	24,008.00	324
Purchase of productive equipment	6,140.82	49	5,678.57	42	3,465.85	41	5,163.00	132
Purchase of durables	6,432.55	22	7,421.89	19	2,087.68	19	5,370.00	60
House Repair	9,025.84	209	5,042.18	140	3,742.58	141	6,367.37	490
Land purchase	8.00	2	60,004.00	2	8.00	1	24,006.40	5
Family business	49,401.28	25	49,167.33	12	22,250.00	8	44,512.00	45
Purchase of livestock/poultry	6,632.08	113	10,500.12	69	5,114.46	83	7,163.90	265
Other Investment	18,987.35	62	10,985.09	33	6,240.74	54	12,595.46	149
Annual Savings	35,251.00	8	47,600.00	5	12,000.00	2	36,267.20	15
Total Expenditure	**154,767.84**	**382**	**157,666.94**	**252**	**112,821.75**	**273**	**142,947.87**	**907**
On-farm (Agricultural)	43,119.32	176	57,550.00	90	30,965.69	102	43,279.89	368
Off-farm (Non-agricultural)	60,011.16	180	58,892.17	102	69,381.15	122	62,558.19	404
Labor Sale	79,031.14	289	76,193.41	182	63,988.94	226	73,412.77	697
Business	121,958.33	48	87,750.00	20	94,130.43	23	107,406.59	91
Charity /Begging	22,046.16	139	20,748.21	56	15,187.61	72	19,924.43	267
Loan/Microcredit	49,738.13	252	93,390.91	110	29,556.04	27	60,681.29	389
Total Income	**152,920.76**	**382**	**154,223.44**	**252**	**107,603.96**	**273**	**139,642.69**	**907**

Source: Author's Calculation from Survey Data, 2023

Table 7: Distribution of Households According to the SSNPs

Type of SSNPs	Type of Household					
	Full beneficiary (Both SSNP and Micro-credit)		Partial beneficiary (SSNP)		Total	
	N	%	N	%	N	%
VGD	127	33.25	30	24.59	157	31.15
EGPP	2	0.52	0	0.00	2	0.40
RERMP	4	1.05	6	4.92	10	1.98
PESP	45	11.78	5	4.10	50	9.92
SESP	11	2.88	3	2.46	14	2.78
OAA	113	29.58	42	34.43	155	30.75
AWDW	64	16.75	32	26.23	96	19.05
AFID	30	7.85	9	7.38	39	7.74
Haor Program	1	0.26	0	0.00	1	0.20
Ration Card	3	0.79	1	0.82	4	0.79
Grand Total	382	100.00%	122	100.00%	504	100.00

Source: Author's Calculation from Survey Data, 2023