Manar Elsharq Journal for Management and CommerceStudies
ISSN: 2959-0655 (Print)
http://meijournals.com/ara/index.php/mejcms/index

Impact of Microcredit on Poverty Reduction in Bangladesh: a cross- sectional study

Jakia Benta Sonia[1], Syed Rakibul Hasan[1], Nahid Sultana[1] , Mst. Farzana Akter[2] and Mohammad Ohid Ullah[1]*
1Department of Statistics, Shahjalal University of Science and Technology, Sylhet-3114, Bangladesh.
2Department of Community Health Sciences, University of Manitoba, Winnipeg, Manitoba, Canada

*Correspondence: ohid-sta@sust.edu

ARTICLE INFO

Received: 18 April
Accepted: 01 June
Volume: 2
Issue: 2

ABSTRACT

Purpose: Usually, microcredit is known as the providing of "small loans" to the poorer group of the population although it differs from country to country. Many poor and hardcore poor people have been taken the microcredit to reduce their poverty. This study aimed to detect the impact of microcredit on poverty reduction among different levels of poor people.

Methodology: Primary data were collected using cluster sampling from the 14 different slum areas from Sylhet city in Bangladesh (n= 408) based on a semi-structured questionnaire during October 2023 to December 2023. Descriptive statistical analysis and Generalized Estimating Equations (GEE) were used to analyze the data.

Findings: It was observed that among the participants 76% are male and 24% are female. Around 84.1% individuals were taking microcredit from the different NGOs and among them 91.6% got benefit from their loan and their income was increasing 14.6% as well. It was also observed that 54.4% people are anxious about their food and 15.9% people are sleeping with hunger. Results also revealed that after taking microcredit the average percentage of hardcore poor people are significantly decreased compared with non-poor. It may indicate that after taking microcredit hardcore poor people invest their loan more appropriately compare to poor and non-poor groups of people.

Conclusions: Taken together, we conclude that microcredit might play better role for hardcore poor people. To get more success of microcredit and hence for sustainable development- government and non-government organizations should pay more attention to reduce the interest rate of loans.

Keywords: Microcredit, Generalized Estimating Equations (GEE), Poverty reduction, Bangladesh.

Introduction

Microcredit refers to a small amount of money that is given to someone to improve his/her lifestyle financially who is not financially stable and does not have a fixed amount of money. It is planned to support entrepreneurship, reduce poverty, and, in many cases, empower women. Microcredit has existed in Asia for centuries in various forms like informal loans, borrowing, etc. Like Bangladesh, many developed and developing countries, such as Ethiopia, India, Mongolia, Bosnia, Herzegovina, Morocco, the Philippines, and France, etc., use the microcredit program to alleviate poverty. Many studies show how the microcredit program has significant effects on poverty alleviation, for example, in the urban slums of Hyderabad (India), in rural and urban areas of the state of Sonora, Mexico, in rural Mongolia, and in rural Morocco [1]. Microcredit provides a wider range of financial services, especially savings accounts, to the poor. Modern microcredit is usually considered to have originated with the Grameen Bank, which was founded in Bangladesh in 1983. Many traditional banks and NGOs consequently introduced microcredit despite initial uncertainties [3].

Facing difficulty in leading an easy life by not getting basic needs (as food, clothing, shelter, and education) is called poverty. Bangladesh is a densely populated developing country in the South Asian

region. A study shows that about 63% of the total population lives in rural areas, and 18.7% of the total population lives below the poverty line and has to spend 80% of their income to buy food [2]. Poverty has become one of the major social problems that also include income, consumption, nutrition, health, education, housing, insecurity, isolation, gender inequality, and population growth [3]. The financial sector of Bangladesh has become unsuccessful in ensuring the basic needs of these poor people. In a wider sense, these deficiencies cause a huge deprivation in the whole economic system, where the economy faces a lack of human capability and a lack of resources [4]. Most of the time, poor people cannot take loans from higher formal sectors, such as banks and institutions, as they have a preference for clients who have higher loan capabilities and higher income levels [5, 7]. So microcredit is considered one of the most significant tools for poor people to take opportunities to change their economic condition, according to The Role of Micro-Credit in Poverty Alleviation, 2009 [6, 8].

In Bangladesh, a study was done on the people who took loans from Grameen Bank, BRAC, and ASA, and in that study, associations were checked among the impact of microcredit, poverty, and program duration by logistic regression, which was estimated in three different specifications [7]. Another research was done only with the people from Rangpur district and to analyze the association among the impact of the microcredit program, the situation of change in income, asset development, level of living, lifestyle patterns, poverty status before and after engagement with the credit program, etc., a Chi-square test, an F test, and a multiple regression model were used [9]. In another study that was done in Panchagarh district, researchers used simple descriptive statistics, percentage distribution, and cross tabulation in the data [8]. In Laxmipur, a study was done on people who take microcredit from government and non-government organizations, and they used the Chi-square test to see the relationship between monthly wage and monthly family income, and they also used multiple regression analysis to see the relationship between the dependent variable (monthly income) and the independent variables (age of the main income earner, gender, size of the family, microcredit taking status, wage rate fixation process, other income source ability, and wage payment method) [2]. A study was done on government organizations, non-government organizations, and microfinance institutes to see the influence of microcredit on poverty alleviation, and they used two-level binary logistic regression and multinomial logistic regression [6]. Another study is being conducted on poor households in Mymensing District to see the effect of microcredit on poverty reduction. They find that different NGOs play an important role in changing the living standard of poor households (employment, better education, better health facilities, higher health expenditure, etc.). They use a percentage distribution to show the results [10].

Poverty is one of the pivotal social problems, and it is mainly because of the financial crisis [6]. To reduce their financial problems, they usually take microcredit from government and non-government organizations. Some studies have been conducted to know the effect of microcredit on poverty reduction; most of their studies are based on cross-sectional data and they used percentages [12], multiple regression model [2] and/or a logistic regression model [6]. To the best of our knowledge, hardly longitudinal studies have been found by using GEE in the data analysis. Therefore, we aim to detect the effect of microcredit on poverty reduction in Bangladesh by using a GEE in secondary longitudinal data. Simulated data based on this secondary data will be used to run GEE as well.

Methodology:

Primary data were collected using cluster sampling from the 14 different slum areas from Sylhet city in Bangladesh (n= 408) based on a semi-structured questionnaire during October 2023 to December 2023. Before collecting the information from the participants, they were properly informed about the study and they willingly participated in this study. Response variable (Percentage of people) was calculated dividing the number of people in each status (hard core poor, poor and non-poor) by the total number of people in each cluster for each time (before and after). Status was identified based on the daily income of the individual following the World Bank criteria (https://databankfiles.worldbank.org/public/ddpext_download/poverty/987B9C90-CB9F-4D93-AE8C-750588BF00QA/current/Global_POVEQ_BGD.pdf). We approximately calculated - Handcore poor : upto 250 TK(BD) income daily, Poor: 251-400 TK(BD) and Non-poor: TK (BD) 400+

As part of exploratory data analysis, the longitudinal data will first be visualized by using some plots to understand the patterns. It will use the Generalized Estimating Equations (GEE) [13] model to analyze longitudinal/correlated data with the variables and to calculate the effect of microcredit on different groups of people.

The model of GEE is: $g(\mu_{ij}) = x'_{ij}\beta$

Where, $\mu_{ij} = E(Y_{ij})$, g is the link function, Y_{ij} is the response vector of i[th] subjects at time j, x'_{ij} is the vector of covariates/independent variables of i[th] objects at time j, β is vector of the coefficient of the independent variables.

First, we need to find the distribution of the response variable. As the response "percentage" is the portion of total households in different groups, we need to select its distribution. Second, we need to select a proper correlation structure for this model. There are multiplicities of correlation structures, like unstructured, and exchangeable, in the repeated measures design. The QIC (quasi-likelihood under the independence model criterion) is a particularly useful tool for choosing the best correlation structure for the GEE model. Therefore, it will run a GEE model using different correlation structures and compare the value of QIC to find the best one. The smallest QIC indicates the better model. For the data analysis, Statistical Package for Social Sciences (SPSS) was used.

Results and Discussion:

It was observed that among the participants 76% are male and 24% are female. Our cross-sectional study includes the respondents from different clusters in Sylhet city, Bangladesh where Jalalia having the highest representation at 10.5%, followed by Kalighat (9.8%) and Ujjibon (9.1%) while Subhanighat and Tilargaon clusters have lower representation at 3.7% and 2.7% respectively. Educational backgrounds are diverse, with a number of portion having primary education (38.7%), followed by secondary (23%) and higher secondary (4.9%) levels, while 33.3% have no formal education. It also reflects diversity in occupation, with a substantial number engaged in business (24.5%) and driving (21.3%).

We also observed that, notably, 84% of the total respondents have utilized microcredit, primarily from NGO organizations such as Grameen Bank (14.2%), BRAC (28.5%), and ASA (44.8%). It indicates that "ASA" is the most prevalent microcredit provider in that region. Besides, the majority of them are opting for weekly installment plans (53.4%). Respondents primarily invest the load towards buying auto/rickshaw/equipment (47.7%), reflecting a focus on income-generating assets, and also 27% for their family crisis and 18% for house renting or repairing. It was also observed that most of the respondents (91.6%) report benefiting from the microcredit they received, while 66.9% continue their investments, showcasing positive economic activities. The emotional and financial well-being of the population is also explored, with 82.6% reporting feeling better while, 67.4% experiencing tension. ." Financially, the landscape is diverse. Financial struggles are reflected in the perception of their current financial status, with 39.5% describing it as "Not so good" and 32.6% as "Good."

Repayment rates are low, a majority (81.7%) has not repaid their loans yet, suggesting potential financial difficulties. Also a number of portion (29.1%) reports facing challenges for repayment, while others either face difficulties or none at all. High-interest rates are cited by 15.4% as a barrier to repayment, while 41% mention other challenges. Basic needs such as food security and sleep are also addressed, with 54.4% expressing anxiety for food or taking less food (43.6%). Despite these challenges, a majority (84.1%) report not sleeping with hunger, indicating some level of resilience. A small but noteworthy percentage (15.9%) reports sleeping with hunger.

From Figure 1 it was seen that 5.8% participants are hardcore poor, 18.6% are poor, and 75.6% are non-poor at before taking microcredit. And after taking microcredit total hardcore poor people are 2.9%, poor are 14.2% and non-poor are 82.8% (Fig.2). It is clearly seen that after taking microcredit hardcore poor and poor people are decreased and non-poor people are increased. Indicates microcredit plays better role to reduce poverty.

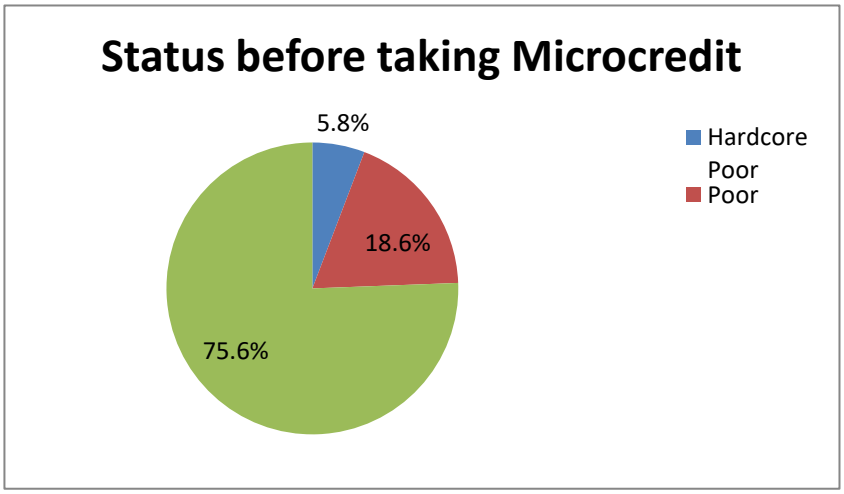

Figure 1: Status before taking Microcredit

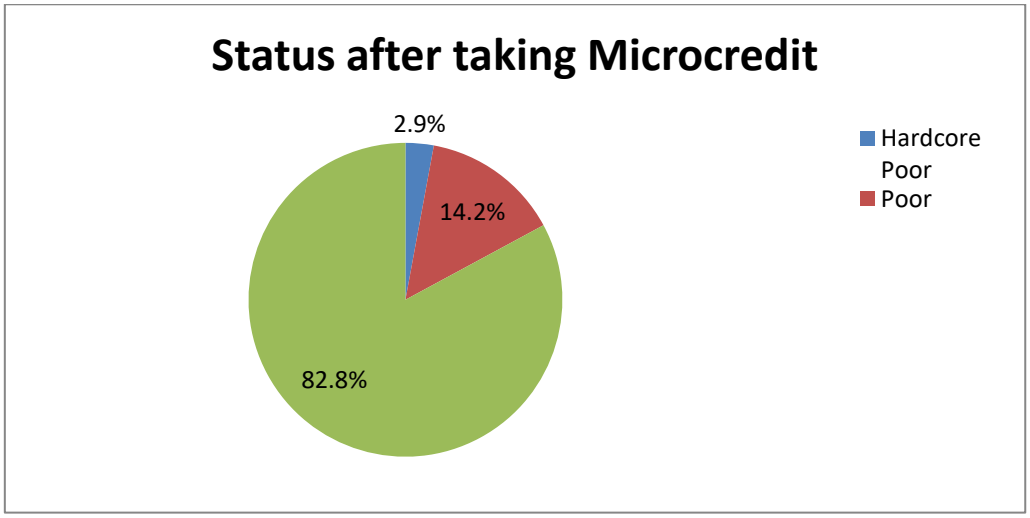

Figure 2: Status after taking Microcredit

These specific percentages provide a detailed picture where microcredit has been accessed by a number of portions of the population, leading to various economic activities and reported benefits. However, challenges, especially related to repayment and financial difficulties are still exist.

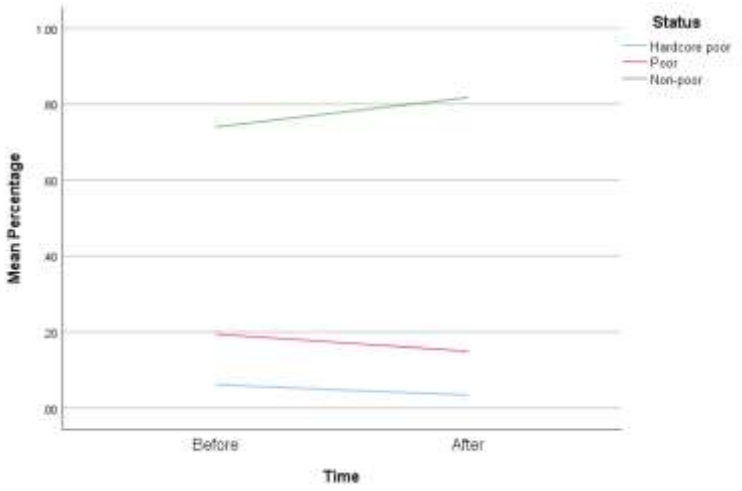

Figure 3: Mean percentage profile

In Figure 3 mean percentage profile revealed that after taking microcredit the average percentage of hardcore poor people are decreased compared with non-poor. It may indicate that after taking microcredit hardcore poor people invest their loan more appropriately compare to poor and non-poor groups of people. From Table 1, it was observed that the mean (±SD) age of the respondents was 38.66 (12.237) years. The daily income and expenditure reflects the main economic condition of the respondents. Daily income has a mean(±SD) of 739.75 (498.963) Taka, pointing to considerable variability in income levels among the surveyed individuals. Similarly, daily expenditure has a mean (±SD) of 585.71 (317.931) Taka, suggesting notable diversity in daily spending patterns. It suggests that most individuals have lower daily incomes and expenditures. Family size, with a mean (±SD) of 5.26 (2.048), suggesting a concentration around the mean with some households having larger family sizes. The number of earning members, with a mean (±SD) of 1.52 (0.764), portrays variations in the workforce within households, indicating that most households have a low number of earners, with fewer having more earning members. Installment amount, in case of the respondents received microcredit has a mean (±SD) of 3507.85 (4442.538), indicating that the majority of individuals are engaged in lower installment amounts, with a few significantly making higher installment amounts. Total installments, having a mean (±SD) of 33.78 (19.185) shows variability in the overall payment patterns.

Individuals incomes before and after taking a loan revealed an overall financial picture among the participants in our dataset to detect the impact of microcredit in poverty reduction. Income before taking a loan has a mean (±SD) of 664.88 (382.694), reflecting the baseline financial condition and after taking a loan has the mean (±SD) income increases to 763.05 (515.253) , indicates after taking microcredit their financial growth is 14.7% . This suggests that, on the whole, taking a loan is associated with a positive impact on income.

Table 1: Descriptive statistics of the individuals

Characteristics	**Minimum**	**Maximum**	**Mean**	**Standard deviation**
Age	16	80	38.66	12.237
Income daily	100	6000	739.75	498.963
Expenditure daily	100	3500	585.71	317.931
Family members	1	20	5.26	2.048
Earning members	1	5	1.52	.764

Install amount	200	40000	3507.85	4442.538
Total installment	10	135	33.78	19.185
Income before taking loan	0	4000	664.88	382.694
Income after taking loan	100	6000	763.05	515.253

The following table shows the results of GEE. We run the model using model based as well as robust approach taking independent and exchangeable structure. Finally we found lowest AIC in robust based approach with exchangeable correlation structure. So the results of the final model are presented in the Table-2.

Table 2: Results of GEE

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test		
			Lower	Upper	Wald Chi-Square	df	Sig.
(Intercept)	.663	.0542	.556	.769	149.624	1	.000
Hardcore poor	**-.574**	.0751	-.722	-.427	58.574	1	.000
Poor	**-.423**	.0929	-.605	-.241	20.740	1	.000
Non-poor (ref)	.	.	.	.	.	.	.
time	.077	.0234	.031	.123	10.907	1	.001
Hardcore poor * time	**-.104**	.0319	-.167	-.042	10.710	1	.001
Poor * time	**-.122**	.0425	-.205	-.039	8.253	1	.004
Non-poor * time (Ref)	.	.	.	.	.	.	.

From the GEE results, it was seen that percentage of hardcore poor (p value=0.001) and poor (p-value=0.004) people are significantly decreased over time. That is, after taking microcredit percentage of hardcore poor and poor are decreased compare to non-poor.

Discussion and conclusions

The main objective of microcredit program is to poverty alleviation which has become one of the primary goals of developing countries and international assistance agencies and the eradication of poverty represents one of the most important challenges facing the world in the 21st century. Though microcredit is a useful concept of helping poor people to recover their situation, misuse of microcredit, loss of business using microcredit, high interest rate of microcredit, weather, geographical condition etc. may create barriers in the way of poverty alleviation. Based on the data this study shows that the percentage of hardcore and poor people decreased which reveals hardcore poor and poor people use the microcredit loans properly, so their situation changed from hardcore poor to poor and poor to non-poor. From the different studies [5,7] it can be predicted that poor people may not understand about the microcredit program due to illiteracy, they may use it in business which may face losses because of proper deficiency in business related issues or any agricultural work or in own household which didn't give any feedback. Besides, after taking microcredit people need to pay high interest rate, which is

sometimes impossible for poor people to pay the loans in due time. This high interest rate may create dissatisfaction to that organization and may divert poor people from taking microcredit [6,8]. Several studies[8-10] gives a decision that the percentage of lenders of microcredit loans are higher in the group of hard-core poor people as they are more encouraged to take microcredit and economic opportunities to improve their financial condition. Our generalized estimating equations (GEE) also shows the improvement (as the percentage of hardcore poor and poor are decreased significantly over time) of the financial condition after taking microcredit and it brings out that hard-core poor people and poor people have improved their daily income after taking loan compare to non-poor people. The study suggests that the hardcore poor people who had joined the microcredit program run by Government and Non-Government (NGOs) became more beneficial than the people who were poor and non-poor.

Conclusions and suggestions:

Poverty alleviation programs intend to help individual who have no income source by providing them small amount money, material, business ideas etc. Because of the credit risks and relatively high costs associated with small loans, the traditional banking system is generally not willing to implement a microcredit system. Microcredit helps rural people to come out of the clutches of money lenders but let them to hold under the institutionalized money lenders like the NGOs and MFIs and they could not come out from poverty. This type of program become unsuccessful due to various reasons like education level of borrowers, number of people having knowledge about such programs, variation in the occupation of the households, passion of the clients, authenticity in the work of officials of the program providing organization etc. Microcredit is a very useful method of reducing poverty from the society if proper steps can be taken to reduce the barriers.

Taken together, we conclude that microcredit might play better role for hardcore poor people .To get more success of microcredit and hence for sustainable development- government and non-government organizations should pay more attention to reduce the interest rate of loans. More study is needed considering other divisions to get proper picture.

Acknowledgements:

We would like to thanks SUST Research Centre for funding this study. We also like to thank the participants of this study.

Conflict of Interest: None

Funding: Research Center, SUST, Sylhet, Bangladesh

REFERENCES

[1] A. Tarozzi, J. Desai, and K. Johnson, "The Impacts of Microcredit: Evidence from Ethiopia," Am. Econ. J. Appl. Econ., vol. 7, no. 1, pp. 54–89, Jan. 2015, doi: 10.1257/app.20130475.

[2] M. R. Karim, S. Tania, and M. M. R. Farazi, "Role of Micro-credit in Poverty Alleviation of Rural Poor: Evidence from Laxmipur District of Bangladesh," J. Bus. Technol. Dhaka, vol. 7, no. 2, pp. 37–55, 2012, doi: 10.3329/jbt.v7i2.16453.

[3] T. K. Das and V. Pulla, "Is Micro Credit in Urban Poverty Making a Difference? A Review from Bangladesh," Int. J. Soc. Work Hum. Serv. Pract., vol. 2, no. 2, pp. 73–81, Apr. 2014, doi: 10.13189/ijrh.2014.020210.

[4] P. Mosley, "Microfinance and Poverty in Bolivia," J. Dev. Stud., vol. 37, no. 4, pp. 101–132, Apr. 2001, doi: 10.1080/00220380412331322061.

[5] M. S. Haque and M. Yamao, "Can microcredit alleviate rural poverty? A case study of Bangladesh," World Acad. Sci. Eng. Technol., vol. 46, pp. 648–656, 2008.

[6] M. A. Khatun, M. A. Islam, and S. Majumder, "Impact of micro-credit programmes on poverty alleviation in Bangladesh," Bangladesh J. Agric. Econ., vol. 35, no. 1–2, 2012. Available: https://ideas.repec.org/a/ags/bdbjaf/196767.html.

[7] M. J. A. Chowdhury, D. Ghosh, and Robert E. Wright, "The impact of micro-credit on poverty: evidence from Bangladesh," Prog. Dev. Stud., vol. 5, no. 4, pp. 298–309, Oct. 2005, doi: 10.1191/1464993405ps116oa.

[8] M. S. U. Mazumder and W. Lu, “Micro-Credit and Poverty Reduction: A Case of Bangladesh,” Prague Econ. Pap., vol. 2013, no. 3, pp. 403–417, 2013.

[9] F. Ahmed, C. S. N. A. H. Idris, and R. A. Begum, “Impact of microcredit on poverty alleviation among rural women: A case study of Panchagarh District in Bangladesh,” Afr. J. Bus. Manag., vol. 5, no. 16, pp. 7111–7119, Aug. 2011, doi: 10.5897/AJBM10.1319.

[10] Dr. Md. N. Islam, Md. T. Hossain, and S. Afrin, “Impact of Micro-Credit to Reduce Poverty: A Case Study of Mymensingh,” vol. 31, pp. 227–240, Sep. 2018.

[11] M. A. Islam, M. A. Khatun, D. Hossain, and J. Alom, “Micro-credit programmes of different NGOs/MFIs: A comparative study,” J. Bangladesh Agric. Univ., vol. 10, no. 2, pp. 297–302, 2012, doi: 10.3329/jbau.v10i2.14922.

[12] T. R. Bose, D. M. H. Chowdhury, and D. T. K. Biswas, Farm Management and Livelihood of Rural Households: A Longitudinal Study. Bangladesh Academy for Rural Development, 2015.

[13] G. Molenberghs and G. Verbeke, Models for Discrete Longitudinal Data. New York: Springer-Verlag, 2005.