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<https://doi.org/10.1057/s41599-023-02196-7>

OPEN

Unraveling the effects of a rehabilitation program on the socioeconomic wellbeing of beggars and begging motivation: evidence from an urban area of Bangladesh

Md. Karimul Islam ¹, Nishad Nasrin², Jannatul Naim², Mahfuza Zaman Ela³, Mohammad Mizanur Rahman⁴, Abu Syed Md. Monjur Alam⁵, Md Nazrul Islam⁶ & Md. Tanvir Hossain ³✉

Beggars have largely been leading miserable lives in the lower stratum of society since time immemorial. Government or private-led policies are rarely undertaken to improve the lives of this unfortunate societal segment. The local governments in divisional cities of Bangladesh have adopted a series of interventions aimed at improving the socioeconomic wellbeing of beggars and equipping them with alternative livelihood management options. We evaluated the effectiveness of this intervention (the rehabilitation of beggars) in the Khulna City Corporation (KCC) area, Bangladesh; we gathered a sample of 385 beggars by employing the non-equivalent group design and instrumental variable regression method. The results provide an interesting inference, showing that the rehabilitation program seemingly has no far-reaching significant impact on the socioeconomic wellbeing of the beggars. To be precise, the program provides evidence of no significant differences in earnings, expenditure, food security, or personal wellbeing between the beneficiary and the non-beneficiary group of beggars. In addition, the program fails to deter beggars from continuing to beg, as the result shows no significant association between taking part in the program and begging demotivation. Consequently, the beggars are continuing begging, which indicates a critical policy failure on the part of both government and implementation bodies. Therefore, the study implicitly recommends on-track monitoring and timely evaluation of such interventions so that immediate action can be taken beforehand to empower beggars and move them up the social ladder both socially and economically.

¹BRAC Institute of Governance and Development (BIGD), BRAC University, Dhaka 1212, Bangladesh. ²Economics Discipline, Social Science School, Khulna University, Khulna 9208, Bangladesh. ³Sociology Discipline, Social Science School, Khulna University, Khulna 9208, Bangladesh. ⁴Department of Urban and Regional Planning, Jahangirnagar University, Savar, Dhaka 1342, Bangladesh. ⁵Administrative Convention Center Development Project, Khulna, Bangladesh. ⁶Forestry and Wood Technology Discipline, Life Science School, Khulna University, Khulna 9208, Bangladesh. ✉email: tanvirku05@soc.ku.ac.bd

Introduction

Beggars are socially excluded and begging is viewed as a pressing social challenge worldwide, and even more so in developing countries like Bangladesh. In Bangladesh, due to extreme poverty, street children are often found in big cities and towns where they live an inhuman life. Most of these street children are engaged in begging. However, little is known about these children's status or their families (Barkat et al. 2012). Due to chronic poverty and marginalization, beggars sometimes become involved in organized crime as a survival strategy, which symbolizes the globalized world's rule over the rest (Rahman 2021). Beggary arises due to poor socioeconomic conditions, poverty, and lack of job opportunities (Khan et al. 2016; Billah and Alam 2017). In Dhaka City, Bangladesh, most child beggars live in the slums; and they become beggars due to extreme poverty, parental force, the influence of friends, or being victims of trafficking (Kamruzzaman and Hakim 2015). In Addis Ababa, on the other hand, begging is treated as a household livelihood strategy; beggars, specifically street children (both boys and girls), consciously earn money to secure their household incomes (Abebe 2008). In the latter group's lives, begging is not a perpetual predicament; the activity is full of complexity and requires experience (Abebe 2008).

However, factors such as polygamy, upbringing of children, illiteracy, sickness, natural calamities, and low-paid work have led these women to undertake begging as a source of income (Sobhani and Murtaz 2015). In China, Jeffreys and Wang (2012) identified that migration leads to begging, which causes social problems. In Bangladesh, various estimates place the number of beggars at over 700,000, with 40,000 of them residing in the capital city of Bangladesh (Susan 2021). According to research conducted by the Bangladesh Center for Human Rights and Development (BCHRD), 16.5% of beggars in the city of Dhaka are children under the age of 12 (Sobhani and Murtaz 2015). As a beggar's ability to draw public attention and sympathy is at the heart of begging, child beggars are deployed in order to court sympathies from people (Owusu-Sekyere et al. 2018). However, beggars, irrespective of caste and creed, have suffered hugely in the context of COVID-19 (Sukmawati and Prasaty 2021; Wismayanti et al. 2021). According to the humanitarian group World Vision International, COVID-19 has compelled eight million children to engage in begging and child labor. Marginalized people are being forced to beg due to a decline in income and layoffs of family members (Susan 2021).

Similarly, in Nigeria, transnational street beggars migrated to the country for better opportunities; they become involved in street begging due to the socioeconomic and environmental challenges faced in their home countries (Ojedokun and Aderinto 2015). Likewise, most Egyptian beggars meet their daily needs by seeking information using assistive devices such as mobile phones. However, illiteracy and lack of awareness hinder fundamental information rights (Mansour 2017; Misganaw and Worku 2013). Moreover, in Ethiopia, street women are victimized by sexual violence, with their public health rights seriously violated. Homeless women are highly vulnerable to sexual violence and cannot access essential medical services during pregnancy and postnatal periods due to the stigma of fear, discrimination, and floating homes. Consequently, street beggars' HIV prevalence rate is higher than that of the general population (Gebreyesus et al. 2019; Alinaghi et al. 2013).

One of the Sustainable Development Goals is "leaving no one left behind"; beggars are included as one of the vulnerable groups for this goal. In order to include beggars in the development process and to preserve their human rights, Zakah can be an effective tool (Billah and Alam 2017). In order to minimize the difference between the well-off and the poor and to establish

social justice, numerous rehabilitation programs have also been undertaken in Bangladesh under Social Safety Net (SSN) programs. Still, there is little evidence for the program's effectiveness from the Bangladesh perspective (Graham and Grisard 2019). In this regard, Haider and Mahamud (2017) argue that in Bangladesh, under the SSN program, when selecting beneficiary groups, the necessary conditions are often overlooked. Therefore, poverty reduction strategies are not achieving their targeted success. Moreover, most of the money allocated to poor and vulnerable groups is spent on food; hence, the efforts under SSN are unsuccessful in many instances. It is argued that beggary cannot be eradicated from society solely through SSN benefits. Nevertheless, SSN benefits can effectively reduce personal and family problems (Zibran et al. 2014). In Indonesia's social rehabilitation programs, to ensure beggars' socioeconomic wellbeing, differences in service standards in terms of resources, budget, cooperation, and coordination between institutions at local, provincial, and state levels, are documented (Wiswayanti et al. 2021). However, there is a missing link between the rehabilitation programs undertaken and the effective execution of the programs; thus, the plight of beggars remains unheard. Moreover, the marginalization of beggars has deepened further during the COVID-19 pandemic due to the absence of specific safety net programs to safeguard this vulnerable group (Akter et al. 2021; Sukmawati and Prasaty 2021). Poorer communities in urban areas, i.e., beggars and slum dwellers, bore the greatest burden from COVID-19, including physical, mental, financial, and social aspects (Sheng et al. 2022).

Though there remains controversy regarding the effectiveness of rehabilitation programs, this study examines the effectiveness of the rehabilitation program in terms of enhancing the socioeconomic wellbeing of beggars. In addition, it investigates whether or not the beggar's rehabilitation program can lessen begging motivation in the context of Khulna City, Bangladesh. Keeping the objectives of the study in mind, the research questions are as follows:

Research questions

1. Does the rehabilitation program enhance the socioeconomic wellbeing (income, expenditure, food security, and personal wellbeing) of beggars?
2. To what extent does the rehabilitation program reduce beggars' begging motivation?

Methods

Study sites, data and survey design. The study is cross-sectional in nature; data were gathered from one of the most populous divisional city corporations of Bangladesh, namely Khulna City Corporation (KCC) (Bangladesh Bureau of Statistics 2015a; 2015b). According to the latest Slum and Floating Population Census, out of the 0.7 million people in KCC, 79,827 were floating people, living in various slums and involved mostly in informal economic activities; some of these floating people were beggars (Bangladesh Bureau of Statistics 2015a; 2015c). In this study, data were collected from the beggars by administering a semi-structured interview schedule (SSIS), which was developed following an extensive review of the existing literature. The SSIS comprised eight mutually exclusive modules; six were used for both beneficiaries and non-beneficiaries of the rehabilitation program, while the remaining two were prepared for beneficiaries only. The authors collected the list of 120 beneficiaries from the Social Welfare Office, Khulna. According to the documents, the

beneficiaries were segregated into three major cohorts, who had received vans (35), sewing machines (37), and tea stalls (48) non-mutually. The authors randomly selected 100 households from the list so that at least 20 samples could be drawn from each cohort (vans, sewing machines, and tea stalls). However, only 81 beggars were found who were the beneficiaries of the rehabilitation program. Of these, only 59 beggars were considered eligible for the study, as the rest were unable to provide information regarding begging and their livelihood options. Thus, the selected beneficiary participants comprised 49% of the beneficiaries and 15.32% of the total sample (385) (see Fig. 1).

In mid-2022, the data enumerators collected information from 333 non-beneficiary beggars within 17 locations in KCC, taking into consideration the concentration of beggars in different spots. A purposive sampling technique was used to collect data from the non-beneficiaries. The reason for applying this sampling technique was the absence of a census or comprehensive list of beggars in the urban area. For the other sample, we randomly selected 59 beneficiary beggars since we had access to the list of beneficiaries. It took around 15 days to conduct the data collection. Of the purposively selected 333 participants, 326 beggars retained based on the eligibility criteria: (i) participants must have been begging in at least three areas within the study area and (ii) participants must be aged 18 or over, i.e., not child beggars. Thus, the study constructed a total sample of 385 beggars, comprising 326 non-beneficiaries and 59 beneficiaries of the beggars' rehabilitation program (see Fig. 2).

Non-equivalent group design. The study adopted a quasi-experimental research design with the gathered cross-sectional data. This was done for two reasons. First, the design enabled us to explore the cause-and-effect relationship between the outcome and intervention when the full experiment was not feasible. Secondly, the study could not conduct any follow-ups or proper randomization at the intervention level. In such situations, quasi-experimental tools such as non-equivalent group design (Denny et al. 2017), regression discontinuity (Béné, and Haque 2022), and propensity score matching (Farjana et al. 2023), can be useful as impact evaluation techniques. The study, therefore, applied the non-equivalent post-test group design, which did not require manipulation of the independent variables.

Under this post-test group design, beggars were recognized as recipients and non-recipients of the government rehabilitation scheme. The beggars were classified into a treatment group and control group. The treatment group constituted the beneficiary beggars, while the control group constituted the non-beneficiary beggars. The non-beneficiary beggars outnumbered the beneficiary. The two groups were non-equivalent in characteristics in terms of their begging experience, age, and allowance receipt (see Appendix A2). Therefore, we classified the beggars into two dissimilar categories (treatment and control), specifying non-equivalence in characteristics between the groups.

Instrumental variable (IV) regression. When estimating the impact of any intervention, the rehabilitation program by the current study, confounding variables are highly likely to pollute the actual effect of the program on the beggars' wellbeing. To reduce this spurious effect, we have applied the statistical control approach in the selected model, complemented by the instrumental variable regression. Many previous studies had conducted the IV approach, looking for an exogenous variation, in order to evaluate the impact of the intervention on various outcomes such as migration and poverty, training and labor market outcomes, and health interventions (Bang et al. 2016; Mondal et al. 2021;

Ojedokun and Aderinto 2015). The purpose of the IV is to address endogeneity and draw the average treatment effect of programs from the outcome (Faulkender et al. 2020; Asfaw et al. 2019). Endogeneity might originate from omitted variables such as job training and formal credit facilities which are expected to affect the beggars' wellbeing, the dependent variable. (see the details of Eqs. 2–3 in the modeling approach). Therefore, the study applied this econometric tool in order to address potential endogeneity and estimate the consistent impact free from omitted variable bias. The study primarily shows the difference in outcome between beneficiary and non-beneficiary beggars, which is symbolically expressed as $[E(Y|B = 1) - E(Y|B = 0)]$. The expression divide the impact by separating the expected outcome $E(Y)$ of the beneficiary state (if $B = 1$) from the non-beneficiary state (if $B = 0$).

Measures

Household dietary diversity (HDD). Household dietary diversity (HDD) is a measure for ascertaining the food security of households. It records the previous day's intake of foods, listed as 12 categories (cereals, fish and seafood, roots and tubers, pulses/legumes/nuts, vegetables, milk and dairy products, fruits, oils/fatty meat, poultry, offal, sugar/honey, and eggs and miscellaneous condiments). Generally, food security targets the incorporate availability, access, and utilization of food. The study, by using HDD, focused on the household level utilization (intake) of 12 categories of food, which would help ascertain the food consumption pattern of the beggars. The average household diet was measured by dividing the sum of HDD by the number of households. Although there is no accredited cut-off criterion for food sufficiency in the HDD measurement, the value spans between 0 and 12.

Personal wellbeing index (PWI). One of the major goals of the study was to investigate the impact of the rehabilitation program on the beggars' quality of life. It is often difficult to measure subjective wellbeing flawlessly; in the case of beggars, the difficulty mounts due to threats relating to social desirability and comprehension bias, leading to a scarce set of measurements. This study applied the Personal Wellbeing Index (PWI) to ask the beggars basic questions about their standard of living and their feelings regarding their values and position in society. The index contains questions on seven specific indicators of wellbeing. These seven domains (standards of living, health, achievements in life, personal relationships, personal safety, community-connectedness, and future security) were discussed with the beggars in order to ascertain their level of satisfaction in each domain. The level of satisfaction was coded from 0 (indicating no satisfaction at all) to 10 (indicating complete satisfaction). The overall score for each household ranged from 0 to 100, as did the average sample PWI score.

Modeling approach. Equation (1) describes the specification of the ordinary least square (OLS) approach for three key outcome variables (household per capita income, household per capita expenditure, and HDD). These outcomes represent the economic wellbeing status and food security of the beggars' households. For the impact of the rehabilitation program on social wellbeing, the PWI was formalized to use as an outcome variable for the Tobit and IV Tobit regression as described in Eq. (2). In both Eqs. (1) and (2), to filter out the actual impact of the rehabilitation program on beggars' living, the potential bias was internalized with the instrument. To facilitate the process, the two-stage least square approach was mechanized by controlling the potential

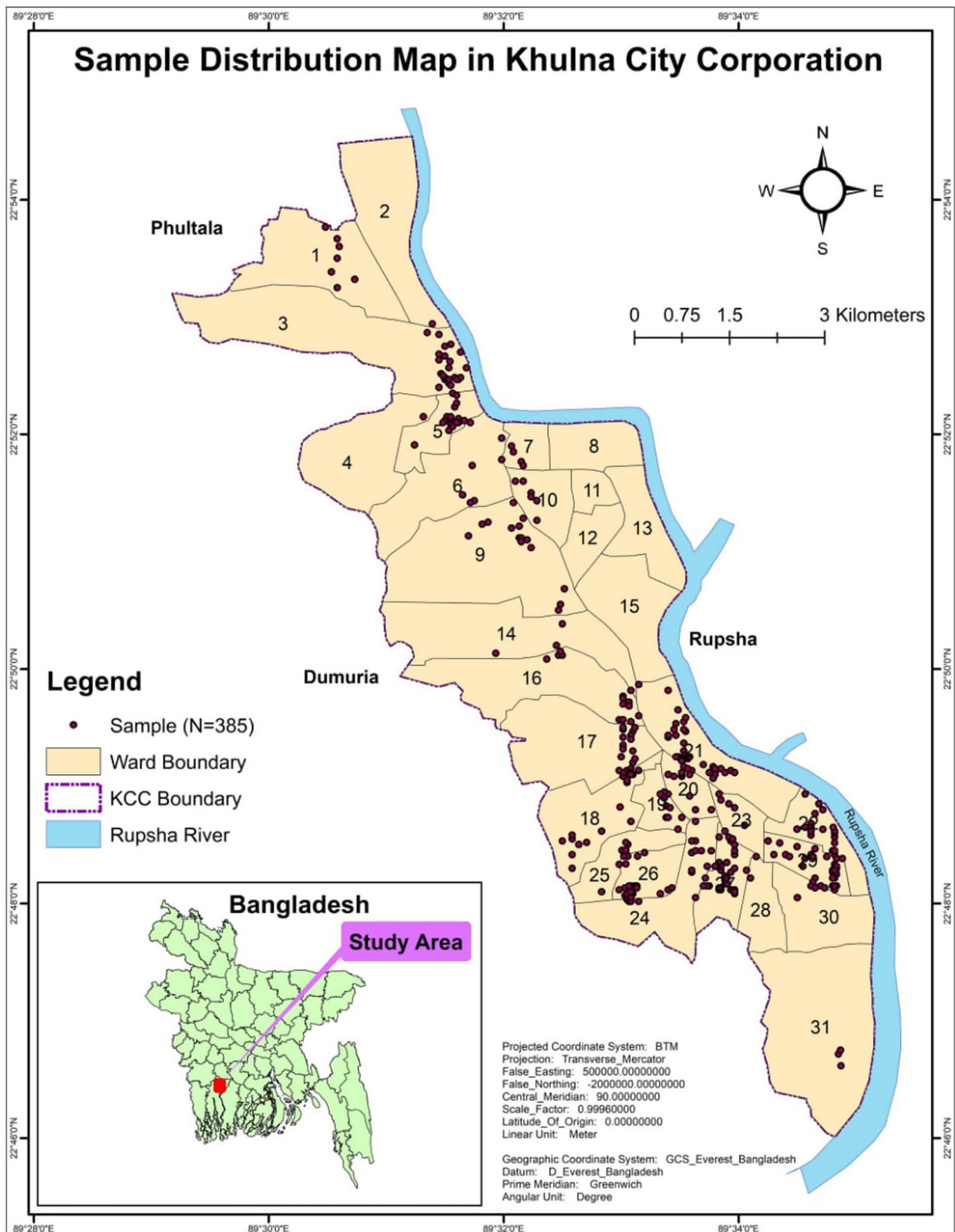


Fig. 1 Map showing the study area with sample distribution in Khulna City Corporation (KCC) area.

factors as described in Eq. (3).

$$Y_{ij} = \alpha + \beta_1 Rehab_i + \beta_2 D_i + \beta_3 COVID_i + \beta_4 L_i + \varepsilon_i \quad (1)$$

First, we run the linear regression for the three outcome variables Y_{ij} on the potential controls D_i (socio-demographic characteristics), $Covid_i$ (Covid-19 related factors), and $Covid_i$

(livelihood information). The aim of controlling these factors is to reduce the bias posed by the unobserved characteristics. $Rehab_i$ is a dummy variable stating the beneficiary status if $Rehab_i = 1$ and non-beneficiary status if $Rehab_i = 0$. Thus, β_i gives an estimate for the impact of being a beneficiary on economic wellbeing. A similar explanation is applicable to Eq. (2) in which PWI_i

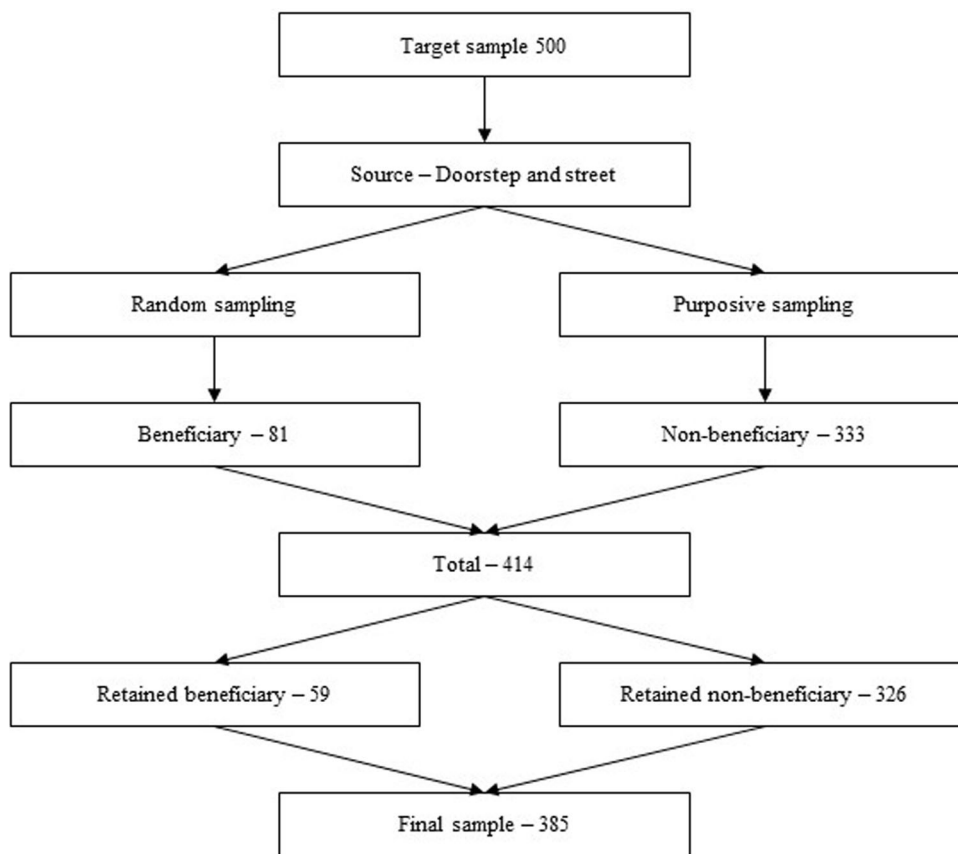


Fig. 2 Sampling procedure. Detailing the selection of samples from beneficiary and non-beneficiary beggars from the KCC area.

measures the outcome for social wellbeing. However, these estimates can still be biased due to several factors, as discussed earlier. Instrumental variable regression was used to test whether the program does indeed enhance the wellbeing of the beggars.

$$PWI_i = \alpha + \beta_1 Rehab_i + \beta_2 D_i + \beta_3 COVID_i + \beta_4 L_i + \epsilon_i \quad (2)$$

$$Rehab_i = \theta + \sigma T_i + u_i \quad (3)$$

We instrumented the intervention beneficiary status based on the type of beggars. The practical evidence provides justification for validating this instrument, since we had learned from the program implementation body (the local government) that beggars receiving intervention had been selected arbitrarily on the street. Hence, we suspected that different types of beggars, categorized as those who beg in the street, on doorsteps, or both, could be correlated with the selection of beggars for intervention. Furthermore, the previous literature had not provided evidence that street begging, doorstep begging, or both were important factors in economic or social wellbeing status. Equation (3) demonstrates the first stage regression, which satisfies the prerequisite of $Cov(Rehab_i, T_i) \neq 0$. The results of this regression are reported in Appendix A1. Equations (2) and (3) reflect the ultimate linear IV and right censored IV Tobit regression, respectively. We transformed the household per capita income and expenditure into natural logarithm in order to fit to the regression interpretation.

Equation (4) regresses P_i (the dummy variables that show the preference of begging over other occupations if $P_i = 1$, and the preference of other occupations over begging if $P_i = 0$) on the potential covariates.

$$P_i = \alpha + \beta_1 X_i + \epsilon_i \quad (4)$$

$$L_i = \ln\left(\frac{P_i}{1 - P_i}\right) = P_i = \sum \beta_i X_i + \mu_i \quad (5)$$

In the same way, Eq. (5), the logistic regression, examines whether rehabilitation has a significant correlation in terms of predicting the probability of preferring begging to other occupations. If this hypothesis is significantly tested, we will be able to conclude that the rehabilitation program has a negative association with begging motivation, otherwise it has no significance.

Results

Descriptive statistics. Table 1 summarizes the sociodemographic characteristics, economic situation, livelihood challenges during the COVID-19 pandemic, financial assistance, and rehabilitation support for the participants (beggars). The majority of the participants were male (51%), and the mean age was about 59 years, with a large standard deviation reflecting the presence of some very elderly individuals, such as one aged 105 years. The participants had very low educational attainment, with an average of less than one year of schooling; 77% of them had no formal education at all (see Table 1). Looking at their socioeconomic condition, the average monthly household income was BDT 7833; this usually covered their average monthly household expenditure (BDT 7519). Moreover, their mean debt level was higher than both their income and expenditure, which suggests that they relied on borrowing to meet their basic needs. The study also assessed a main basic need, the food security of the participants, using the HDD indicator, which reflects access to and ability to purchase different types of food. The mean HDD score reported

Table 1 Descriptive profile of the participants.

Variables	Mean	Std. Dev.	Min	Max
Age (years)	58.673	15.536	19	105
Gender (% male)	0.514	0.5	0	1
Religion (% other than Islam)	0.016	0.124	0	1
Schooling years	0.875	2.013	0	12
Household Size	3.899	1.967	1	9
Earning members	1.392	0.743	0	5
Number of children	2.8	1.709	0	8
Monthly household income (BDT)	7833.14	4260.05	800	28000
Monthly household expenditure (BDT)	7518.571	4521.819	500	20000
Household dietary diversity (HDD)	4.52	1.79	1	12
Personal Wellbeing Index (PWI)	50.69	17.843	5.714	100
Current debt	15587.14	15587.14	0	150000
Occupation beside begging (% yes)	0.047	0.211	0	1
Begging other family member (%yes)	0.091	0.288	0	1
Number of marriages	1.148	0.469	0	3
Migrated (% yes)	0.701	0.458	0	1
Receive financial support from any family members (% yes)	0.338	0.474	0	1
Begging experience (year)	7.3	9.586	4	55
Asset loss during Covid-19 (number)	0.236	0.793	0	9
Forced to begging by Covid-19 (% yes)	0.21	0.408	0	1
Receive any special allowance during Covid-19 (%yes)	0.818	0.386	0	1
Workless days during Covid-19	96.275	120.324	0	730
Preferable occupation (% begging)	0.416	0.493	0	1
Beneficiary of govt. rehabilitation program (% yes)	0.153	0.361	0	1
Categorical responses	Frequency	Percent	Dummy	
Marital Status				
Married	220	57.14	0	1
Unmarried	11	2.86	0	1
Divorced	6	1.56	0	1
Widow/Widower	121	31.43	0	1
Deserted	27	7.01	0	1
Beggar Type				
Doorstep	30	7.79	0	1
Street	224	58.18	0	1
Both	131	34.03	0	1

by the participants was 4.52 out of 12, which indicates a poor and inadequate diet for beggars.

Social acceptance and dignity are important aspects of the beggars’ wellbeing. To measure wellbeing, we used the PWI, which is a scale from 0 to 100 that reflects how satisfied people are with their lives. The average PWI score of the beggars in our study was 50.69, which indicates that they were neither happy nor unhappy with their social situation. However, this score masks the diversity and challenges that they face in their daily lives. For example, only 5% of beggars had another source of income besides begging, and only 33.8% received financial support from their family members. The rest had to rely on their own begging income to survive. Moreover, 9% of the beggars’ family members were also engaged in begging, which indicates a constant social stratifications among beggars and social exclusion. Most of the beggars (70%) had migrated to the city at some point in their lives, hoping for better opportunities, but had ended up begging for a long time. The duration of their begging experience ranged from 4 to 55 years.

The COVID-19 pandemic had worsened the livelihood conditions of the beggars. During the lockdown, they could not engage in work (begging) for an average of 96 days, which forced 21% of beggars to start begging again after the lockdown was lifted. They also suffered from asset loss, as they had to sell some of their belongings to cope with the loss of income. The average asset loss was 4.5 out of 10, which shows how vulnerable beggars are to shocks and stresses. On the positive side, most of the

beggars (81%) received some form of in-kind assistance, such as food, from private or public sources during the pandemic. However, this assistance was not part of the rehabilitation program that we evaluated in this study. The rehabilitation program only covered 15% of the beggars in our sample.

We also explored the preferences and aspirations of the beggars regarding their livelihood options. We found that 41.6% wanted to continue begging as their occupation, while 59.4% wanted to switch to other occupations that suited their skills and abilities. The reasons for wanting to continue or quit begging varied among the beggars, depending on their personal circumstances and experiences. The marital status of the beggars also influenced their choices and opportunities. The majority (57%) were married, while others were unmarried (3%), divorced (2%), widowed (31%), or deserted (7%). We also classified the beggars into three types based on where they begged: doorstep beggars (8%), street beggars (58%), or both (34%).

Figure 3 shows the comparison of daily earnings from begging between the beneficiaries and non-beneficiaries of the rehabilitation program according to hours spent on begging. The figure shows that there was no significant difference in earnings between the two groups across different hours of begging. Both groups earned more as they spent more time begging, but the slopes of the fitted lines are almost identical. This suggests that the rehabilitation program had not made any significance difference in the income level or productivity of the beneficiary and non-beneficiary beggars.

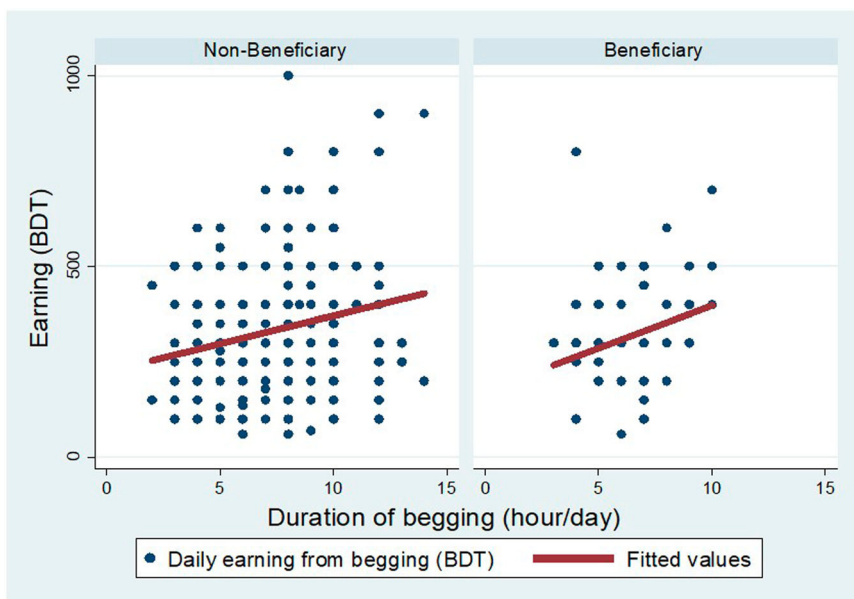


Fig. 3 Earning of beggars in a day as per duration of begging. Earning variations among beggars, both beneficiary and non-beneficiary, in a day as per hours of begging.

Impact of rehabilitation program on wellbeing. This section assesses the effectiveness of the rehabilitation program in enhancing the wellbeing of beggars. To test our hypothesis, we present the results of our regression analysis in Tables 2–4. Tables 2 and 3 show the impact of the program on four key indicators of wellbeing: per capita household income, per capita household expenditure, food security (HDD), and personal wellbeing (PWI). In Table 2, we control for other variables that may influence these four outcomes, such as the demographic and socio-economic characteristics of the beggars and their households. We use OLS regression for income, HDD, and PWI, and Tobit regression for expenditure (column 4), as it is censored at zero (Table 2). The findings do not provide any significant association between the outcomes and the benefit of rehabilitation. However, the program has a positive and weakly significant ($p < 0.10$) effect on expenditure at the household level. More precisely, the beneficiary beggars of the rehabilitation program were likely to expend 15.7% more than the non-beneficiary beggars (Table 2). This could be explained by the fact that some of the beneficiaries may have sold or exchanged the livelihood-supportive appliances that they received from the program for cash or food. This would suggest that the program did not match the needs and preferences of the beggars or provide them with sustainable livelihood options.

To obtain a more consistent estimate, we used the IV regression, allowing us to obtain the unbiased effect of the intervention (Table 3). Instrumenting the variable - beneficiary of the government rehabilitation program by type of beggar, we checked the potential endogeneity. The first-stage regression is reported in Appendix A1. The IV regression results in Table 3 show that the rehabilitation program has no impact on income, HDD, or PWI. This indicates that the intervention is insufficient to improve beggars' earning potential, food security, or satisfaction with their lives. This consequence is reflected in Table 4, which shows that the program is not significantly correlated to begging motivation (outcome variable). It was also observed that male beggars are less inclined to beg compared to their female counterparts ($p < 0.10$). Furthermore, the asset loss during the COVID-19 pandemic has caused a negative impression among the beggars in terms of engaging in begging activities ($p < 0.05$) (Table 4).

Table 3, among other factors, shows that having another occupation besides begging is predicted to increase beggars' per capita household income by around 43% (42.8, $p < 0.05$). Receiving special allowance during the COVID-19 pandemic is positively associated with higher per capita household income (0.319, $p < 0.01$) and expenditure (0.049, $p < 0.01$) for the beggars. The same finding is also evident in Table 2 (multivariate regression). Similarly, being married more than once is likely to increase per capita household income (0.116, $p < 0.10$), expenditure (0.189, $p < 0.05$), and HDD scores (0.029, $p < 0.10$). An extra marriage provides an extended opportunity to access the income and assets of spouses. Therefore, female beggars often engage in marital relationships with more than one man.

The positive relationship between workless days and expenditure could also be attributed to the fact that many beggars received cash or in-kind support from various donors and organizations during the pandemic. Table 3 shows that the only variable with a negative and significant effect on PWI is debt. This variable captures the psychological stress and burden that debt imposes on beggars' wellbeing. The results suggest that reducing debt is an important factor in improving the satisfaction and happiness of beggars.

Discussion

The study had two main objectives: first, to investigate whether the rehabilitation program improves the socioeconomic wellbeing of beggars, including their income, expenditure, food security, and personal wellbeing; and secondly, to assess the program's effectiveness at reducing begging motivation. This research is a noteworthy addition to social research as it delves into the subjective and overall wellbeing of destitute beggars, an aspect that has rarely been addressed in the existing literature. The findings of this study provide surprising insights in this regard.

Most of the participants in the study were male, predominantly older, and lacked formal education. While their monthly income was sufficient to meet household expenses, a significant portion had to be allocated for debt repayment. Additionally, the COVID-19 pandemic inflicted severe losses on the earnings and assets of lower-income individuals in society; the financial aid from both

Table 2 Multivariate OLS and Tobit regression on the outcome of the rehabilitation program.

Variables	(1) Ln (Per capita HH income)	(2) Ln (Per capita HH expenditure)	(3) HDD score	(4) PWI
Beneficiary of govt. rehabilitation program (1 = Yes, 0 = otherwise)	0.0216 (0.0734)	0.157* (0.0860)	0.0232 (0.0202)	3.896 (2.579)
Other occupation besides begging (1 = Yes, 0 = otherwise)	0.338*** (0.0700)	0.0956 (0.104)	0.0753 (0.0472)	3.472 (4.364)
Age (years)	-0.00673*** (0.00198)	-0.000627 (0.00179)	-0.000511 (0.000464)	-0.0282 (0.0598)
Gender (1 = Male, 0 = otherwise)	0.206*** (0.0685)	0.130* (0.0702)	0.0476*** (0.0181)	0.814 (2.105)
Schooling years	-0.0247 (0.0167)	-0.0195 (0.0156)	-0.00543 (0.00345)	0.238 (0.466)
Religion (other than Islam)	0.136 (0.207)	0.285** (0.137)	-0.00287 (0.0537)	-3.617 (7.243)
Number of marriages	0.133** (0.0553)	0.167** (0.0669)	0.0277* (0.0166)	-0.958 (1.977)
Household size	-0.234*** (0.0183)	-0.200*** (0.0174)	0.00670 (0.00467)	0.927* (0.523)
Earning members	0.0814 (0.0565)	0.163*** (0.0496)	0.0301** (0.0127)	0.687 (1.452)
Help from other members	-0.0364 (0.0733)	-0.0978 (0.0700)	-0.0505*** (0.0176)	1.478 (2.179)
Migrated (1 = Yes, 0 = otherwise)	0.0695 (0.0713)	0.0188 (0.0670)	0.0163 (0.0151)	-2.444 (2.021)
Street beggars (ref. doorstep)	-0.0500 (0.129)	0.117 (0.137)	0.0158 (0.0244)	2.674 (3.457)
Both street and doorstep beggars (ref. doorstep)	0.00636 (0.130)	0.208 (0.139)	0.0497* (0.0263)	4.288 (3.627)
Begging experience (year)	0.00570* (0.00340)	0.000211 (0.00318)	-0.000722 (0.000782)	-0.0853 (0.0978)
Debt	0.00228 (0.00607)	0.00410 (0.00659)	0.00183 (0.00168)	-0.480** (0.204)
Count of asset loss	0.0518* (0.0283)	0.0774** (0.0330)	0.0375*** (0.0117)	2.217* (1.161)
Special allowance during COVID-19 (1 = Yes, 0 = otherwise)	0.290*** (0.0955)	0.0290 (0.0916)	0.0492** (0.0214)	-2.745 (2.692)
Workless days during COVID-19	0.000101 (0.000264)	0.000553** (0.000238)	5.92e-05 (5.82e-05)	-0.00328 (0.00766)
Constant	8.185*** (0.198)	7.619*** (0.201)	0.208*** (0.0408)	50.35*** (5.682)
sigma				17.31*** (0.625)
Mean VIF	1.19	1.19	1.19	1.19
Observations	385	385	385	385
R-squared	0.398	0.309	0.176	
Robust standard errors in parentheses ***p < 0.01, **p < 0.05, *p < 0.1				

public and private sources was insufficient to alleviate their debts. These findings are consistent with previous research (Halim et al. 2022; Lima et al. 2021; Islam et al. 2022; Hossain et al. 2022) that has also revealed the negative impact of the pandemic on beggars' lives. The beggars in this study faced an average of 96 days without work during the pandemic, leading 21% of them to resort to begging. Furthermore, the study found the beggars to have a distressingly low average HDD score, indicating poor food access and purchasing power, resulting in high food insecurity. On the other hand, the PWI scores reported by the beggars suggested relatively stable living wellbeing. This finding is in line with previous research by Sharma and Chandrasekhar (2016), who argued that beggars can find contentment with minimal possessions as long as these possessions are sufficient to sustain them.

The hypothesis that the government rehabilitation program might improve beggars' socioeconomic status, despite their low income, HDD scores, PWI scores, and substantial debt burden, is

refuted by the IV regression analyses. The program has been shown to have no significant impact on the wellbeing of the beggars, including their household per capita income, expenditure, food security, and social wellbeing. Though the underlying reasons for the program's ineffectiveness have not been explored in this study, several factors may be responsible, such as arbitrary selection of beneficiaries, lack of monitoring and evaluation, unclear terms and conditions, inadequate resources, and lack of oversight.

The study also aimed to determine whether the rehabilitation program could reduce the beggars' motivation to engage in begging and facilitate their transition away from this occupation. However, the logistic regression did not find any significant negative association between the program beneficiaries' status and begging motivation. As a result, the majority of the beggars (385 out of 444) continued to beg, and even those who were beneficiaries of the program (59 out of 444) showed no strong

Table 3 IV regression on the outcomes of the rehabilitation program.

Variables	(1) Ln (HH per capita income)	(2) Ln (HH per capita expenditure)	(3) HDD score	(4) PWI
Beneficiary of govt. rehabilitation program (1 = Yes, 0 = otherwise)	-0.486 (0.863)	0.601 (0.906)	0.0106 (0.173)	20.21 (40.10)
Other occupation besides begging (1 = Yes, 0 = otherwise)	0.428** (0.171)	0.0404 (0.186)	0.0831 (0.0548)	1.069 (8.624)
Age (years)	-0.00741*** (0.00229)	-0.000310 (0.00231)	-0.000592 (0.000495)	-0.0126 (0.0808)
Gender (1 = Male, 0 = otherwise)	0.171** (0.0837)	0.150* (0.0877)	0.0445** (0.0214)	1.685 (3.158)
Schooling years	-0.0258 (0.0167)	-0.0208 (0.0149)	-0.00599* (0.00345)	0.227 (0.484)
Religion (other than Islam)	0.0606 (0.252)	0.347* (0.195)	-0.00562 (0.0590)	-1.227 (10.22)
Number of marriages	0.116* (0.0625)	0.189** (0.0750)	0.0292* (0.0170)	-0.250 (2.165)
Household size	-0.232*** (0.0195)	-0.204*** (0.0174)	0.00633 (0.00461)	0.826 (0.591)
Earning members	0.0696 (0.0607)	0.176*** (0.0565)	0.0306** (0.0126)	1.138 (1.728)
Help from other members	-0.0214 (0.0755)	-0.108 (0.0787)	-0.0495*** (0.0175)	1.047 (2.544)
Migrated (1 = Yes, 0 = otherwise)	0.0670 (0.0707)	0.0324 (0.0704)	0.0188 (0.0151)	-2.111 (2.216)
Begging experience (year)	0.0102 (0.00804)	-0.00317 (0.00855)	-0.000471 (0.00169)	-0.218 (0.370)
Debt	0.00287 (0.00639)	0.00345 (0.00693)	0.00181 (0.00169)	-0.503** (0.214)
Count of asset loss	0.0486 (0.0299)	0.0727** (0.0333)	0.0356*** (0.0110)	2.132** (1.021)
Special allowance during COVID-19 (1 = Yes, 0 = otherwise)	0.319*** (0.118)	0.00320 (0.115)	0.0499** (0.0234)	-3.731 (4.071)
Workless days during COVID-19	5.61e-05 (0.000274)	0.000656** (0.000264)	7.30e-05 (5.81e-05)	-0.000380 (0.00863)
Constant	8.240*** (0.207)	7.681*** (0.222)	0.235*** (0.0438)	50.66*** (7.818)
Weak Instrument test ($\alpha = 5\%$) ^a /alpha	Effective F stat = 3.410 < 29.71			-16.36 (40.23)
/lns				2.853*** (0.0338)
Inv				-1.073*** (0.0470)
Wald Chi/Wald Exogeneity	227.01***	179.27***	73.73***	0.17
R-squared	0.338	0.250	0.162	
Observations	385	385	385	385

^aMontiel-Pflueger robust weak instrument test shows if the EF stat is less than the critical value, we can reject the null hypothesis of weak instrument

motivation to abandon begging. This phenomenon is common in Bangladesh, where beggars may perceive begging as a more lucrative and easier source of income compared to other options (Wisamayanti et al. 2021). Furthermore, it is possible that the rehabilitation program failed to provide the beggars with alternative viable income-generating materials, leaving them hesitant to give up begging.

The study identified several factors directly and indirectly related to the wellbeing of beggars. Engaging in other occupations was found to be a significant positive determinant of beggars' per capita household income, which is consistent with the findings of Sobhani and Murtaz (2015). This suggests that having additional income sources, alongside begging, contributes to higher family income. Additionally, households with male beggars appeared to have higher per capita income, expenditure, and HDD scores

compared to those with female beggars. In Bangladesh, men are traditionally considered the primary breadwinners and shoulder more family responsibilities.

Household debt was found to have a negative impact on food security, in line with the findings of Sukmawati and Prasatyo (2021). This relationship can be attributed to a significant portion of earnings being allocated to debt repayment, thereby reducing the share of food expenditure. Interestingly, asset losses and special allowances during the COVID-19 pandemic were identified as positive determinants of per capita income, expenditure, and HDD. This finding contrasts with the results of Simon and Khambule (2021). It is possible that the beggars converted the assistance they received during the pandemic into cash, which they then used to meet their immediate food consumption and personal needs.

Table 4 Predictors of begging motivation.

Variables	(1) ^a Begging motivation = 1, 0 = Other occupations	(2) ^b Begging motivation = 1, 0 = Other occupations
Beneficiary of govt. rehabilitation program (1 = Yes, 0 = otherwise)	-0.0287 (0.0740)	-0.135 (0.324)
Other occupation besides begging (1 = Yes, 0 = otherwise)	0.0782 (0.124)	0.360 (0.541)
Age	0.00367** (0.00178)	0.0166** (0.00784)
Gender (1 = Male, 0 = otherwise)	-0.116* (0.0653)	-0.538* (0.287)
Schooling years	0.000510 (0.0132)	0.00155 (0.0587)
Religion	0.0925 (0.207)	0.484 (0.918)
Marital status (unmarried)	-0.188 (0.157)	-1.110 (0.859)
Marital status (divorced)	-0.118 (0.209)	-0.548 (0.934)
Marital status (widow/widower)	0.0700 (0.0653)	0.280 (0.282)
Marital status (deserted)	-0.148 (0.106)	-0.793 (0.528)
Number of children	-0.0200 (0.0174)	-0.0950 (0.0790)
Household size	0.0297 (0.0183)	0.136* (0.0818)
Number of earning members	0.0298 (0.0431)	0.134 (0.189)
Financial support from other family members	-0.00903 (0.0618)	-0.0270 (0.266)
Family member begging (1 = yes, 0 = otherwise)	0.0885 (0.0968)	0.391 (0.417)
Migrated (1 = yes, 0 = otherwise)	-0.00882 (0.0577)	-0.0368 (0.254)
Street beggars (ref. doorstep)	0.0979 (0.0983)	0.477 (0.461)
Both street and doorstep beggars (ref. doorstep)	0.0742 (0.103)	0.358 (0.481)
Begging experience (years)	0.00177 (0.00278)	0.00781 (0.0119)
Ln (per capita HH expenditure)	0.0193 (0.0458)	0.0937 (0.207)
Ln (debt)	0.00669 (0.00581)	0.0310 (0.0255)
Special allowance during COVID-19 (1 = Yes, 0 = otherwise)	0.0469 (0.0771)	0.202 (0.351)
Forces to begging during COVID-19 (1 = Yes, = otherwise)	-0.0114 (0.0626)	-0.0551 (0.276)
Number of asset loss	-0.161** (0.0777)	-0.761** (0.360)
PWI score	-0.00118 (0.00154)	-0.00589 (0.00688)

Table 4 (continued)

Variables	(1) ^a Begging motivation = 1, 0 = Other occupations	(2) ^b Begging motivation = 1, 0 = Other occupations
Constant	-0.0712 (0.381)	-2.589 (1.728)
Observations	385	385
R-squared	0.091	
Standard errors in parentheses; *** <i>p</i> < 0.01, ** <i>p</i> < 0.05, * <i>p</i> < 0.1		
^a Model (1) represents the ordinary least square estimation		
^b Model (2) represents the binary logistic regression		

Overall, it is not accurate to label the rehabilitation program as a complete failure in addressing the crucial aspects of beggars' lives, such as employment, social status, food security, nutrition, housing, hygiene, education, and physical health. However, the program could have been more effective with a more involved implementation approach, such as conducting need assessment surveys, categorizing beggars based on their specific needs, and implementing regular follow-ups and close monitoring. By tailoring the program in this manner, it would have the potential to make a significant reduction in beggars' motivation to beg, resulting in substantial improvements in their socioeconomic wellbeing.

Strengths and limitations

The present research employs an exceptional dataset to assess the effectiveness of a rehabilitation program targeting beggars, a vulnerable population in Bangladesh. This study significantly enhances our comprehension of customizing rehabilitation programs to enhance the well-being of this vulnerable group, thus making a remarkable impact on the social and humanities domain. Notwithstanding its significance and relevance in the fields of development and humanities, the study is not without its limitations. First, the absence of randomization could compromise the internal validity of the findings. Additionally, the absence of longitudinal data hinders the ability to produce more consistent results. The generalizability of the study's findings might be confined to urban areas resembling the study's context and, at best, to developing nations. It does not account for generalizability from the perspective of developed nations.

Conclusion and recommendations

In Bangladesh, beggars are perceived as a burden due to the prevailing challenges of overpopulation, malnutrition, hunger, and unemployment. Various government organizations and NGOs have attempted policy interventions to address beggars' needs, but these efforts often miss the mark. In KCC area of Bangladesh, beggars are commonly found; considering this issue, a government rehabilitation program has been undertaken to improve the beggars' socio-economic conditions and change their livelihood options. Against this backdrop, this study was an attempt to examine the effectiveness of the rehabilitation program in ensuring wellbeing and generating demotivation for beggary as an occupation.

The paramount takeaway of the study findings is that there were no significant differences in earnings, expenditure, food security, and personal wellbeing between the group of beggars who benefited from the rehabilitation program and those who did not. In addition, the program failed to deter beggars from

continuing begging as the results show no significant association between benefiting from the program and begging demotivation. This aligns with the findings of Febriani and Hastuti (2023) who evaluated the social service for beggars in Pekanbaru City, Indonesia. That program failed to improve the condition of beggars due to a lack of supervision, limited resources and lower coverage (Febriani and Hastuti, 2023). Similarly, Adedibu and Jelili (2011) found that many government measures failed to eradicate street begging and reduce the begging rate in Nigerian cities due to the measures' unplanned and non-coordinated approaches.

One of the significant limitations of this study is the adoption of a non-random sampling technique; however, the authors have yet to find any other options for tracing beneficiary beggars. As endogeneity persists in the model, the IV was adopted to reduce the potential threats of observed and unobserved biases. The findings suggest that the beggars were primarily male, had no formal education, and were mostly overburdened with debt. The key reasons for the rehabilitation program's lack of success may stem from short-term or single-point interventions and inadequate monitoring and evaluation. We recommend a comprehensive survey before piloting a project to identify the most needy and categorize them according to their needs. Furthermore, after providing sufficient livelihood options, proper monitoring and evaluation of the program are required. In addition, motivational programs for encouraging switching from beggary to other livelihood options could be effective.

Data availability

The datasets generated and/or analyzed during the current study are available at Harvard Dataverse [<https://doi.org/10.7910/DVN/UZNU8E>].

Received: 24 March 2023; Accepted: 26 September 2023;

Published online: 12 October 2023

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Author contributions

MKI: Methodology, Software, Formal analysis, Investigation, Data curation, Writing – Original draft, Writing – Review & editing; NN: Methodology, Writing – Original draft, Writing – Review & editing; JN: Investigation, Writing – Original draft; MZE: Investigation; MMR, ASMMA & MNI: Writing – Review & editing; MTH: Conceptualization, Investigation, Resources, Funding acquisition, Supervision, Writing – Review & editing. All authors read and approved the final manuscript.

Funding

This research was funded by the Administrative Convention Center Development Project in Khulna City (Grant No.: 05.44.0000.004.008.04.22-64(20)/17).

Competing interests

The authors declare no competing interests.

Ethical approval

This study was approved by the Khulna University Ethical Clearance Committee (Protocol Number – KUECC – 2023-09-62). All research was performed in accordance with relevant guidelines and regulations.

Informed consent

All participants responding to this cross-sectional survey were provided with information in the informed consent form which explained the research purpose, anonymity, confidentiality of information, and right to revoke participation without prior justification.

Additional information

Supplementary information The online version contains supplementary material available at <https://doi.org/10.1057/s41599-023-02196-7>.

Correspondence and requests for materials should be addressed to Md. Tanvir Hossain.

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