

Utilization of Benefits under Nikshay Poshan Yojana by Tuberculosis Patients: A Cross-Sectional Study in Ahmedabad city, Gujarat, India

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Abstract:


Introduction: Nikshay Poshan Yojana (NPY) was launched in 2018 to meet nutritional needs of tuberculosis patients. **Objectives:** 1. To assess the utilization pattern of monetary benefits under NPY among tuberculosis (TB) patients. 2. To explore the determinants of correct utilization of monetary benefits among TB patients. **Method:** It was a cross-sectional study conducted among TB patients (480) across 32 TB units of Ahmedabad. Fifteen TB patients from each TB unit who had received monetary benefits under the NPY were selected purposively and information regarding Direct Benefit Transfer (DBT) utilization were collected through one-on-one interviews. Statistical analysis was done using SPSS, employing chi square statistics and logistic regression to identify the predictors of utilization. **Results:** Among all the participants, only 394 (82%) patients utilized the received monetary benefit. Six (1%) participants didn't utilise the monetary benefit despite receiving it while 80 (17%) participants were unaware about the received monetary benefits. Among those who utilized the monetary benefit, 289 (73.3%) participants used it for nutritional supplementation while 105 (26.7%) used it for non-nutritional purposes. Previously treated TB patients (AOR=0.164; p<0.001) and presence of food insecurity (AOR=2.322; p<0.001) were found to be the main determinants of correct utilization of monetary benefit. **Conclusion:** A significant proportion of beneficiaries utilized DBT for nutritional purposes, but a considerable number either spent on non-nutritional needs or were unaware about the received benefit. Type of TB case and food security status were found to be the key predictors of intended utilization of benefits received.

Keywords: Food insecurity, Nikshay Poshan Yojana, Tuberculosis

Introduction:

Tuberculosis (TB) remains a pressing public health challenge in India, with millions of new cases being reported annually. India is one of the top five countries worldwide with highest TB burden, contributing 26% of all cases globally.^[1] TB is considered a barometer of social welfare—a social disease with medical aspects. To achieve the goal of “TB Elimination by 2025”, a patient-centric service delivery system is crucial to address social determinants.^[2]

The non-medical risk factors that increase susceptibility of TB include undernutrition, poor housing conditions, overcrowding, poor quality of life, and addiction to smoking and alcohol.^[3] Among these, undernutrition shares a bidirectional relationship with TB: it increases the risk of latent infection progressing to active disease, while active TB further worsens nutritional status. Undernutrition is directly linked to food insecurity, which is defined as a condition in which lack of consistent physical or economic access to

Quick Response Code	Access this article online	How to cite this article :
	Website : www.healthlinejournal.org	Vegad H, Saurabh S, Shukla A. Utilization of Benefits under Nikshay Poshan Yojana by Tuberculosis Patients: A Cross-Sectional Study in Ahmedabad city, Gujarat, India. Healthline. 2026;17(1): 48-53
	DOI : 10.51957/Healthline_815_2026	

Received : 16-01-2026

Accepted : 09-03-2026

Published : 31-03-2026

sufficient, safe, and nutritious food that meets their dietary needs and preferences for an active and healthy life.^[4] Food insecurity is multifactorial issue, common among TB patients in resource-poor settings, adversely affecting treatment adherence and outcomes. Evidence from within the country indicates that providing nutritional support to TB patients can improve treatment outcomes.^[2]

To address this relationship between undernutrition and poor treatment outcome, the Government of India launched the “Nikshay Poshan Yojana (NPY)” in April 2018. This scheme provides nutritional support incentives to all tuberculosis patients through a Direct Benefit Transfer (DBT) mechanism, wherein monetary benefits are transferred directly to the patient’s bank accounts. Possession of bank account is mandatory to receive cash benefit.^[5]

Under this scheme, first instalment of Indian Rupees (INR) 1000 for the initial two months is disbursed immediately after treatment initiation. Subsequent instalments (INR 1000 for every two months) are released only if the patient has completed preceding two months of treatment. Furthermore, a benefit (INR 500 per month) continues as long as the patient remains on the anti-TB treatment.^[5] Additional incentives are provided for treatment extensions and drug-resistant TB.^[6]

Challenges such as absence of bank accounts among patients, lack of awareness about the scheme among patients seeking private healthcare settings and procedural delays hinder the effectiveness of the scheme.^[7]

Existing literature largely focuses on the coverage of benefit, while research on utilization of these benefit remains limited. This study aims to identify gaps by finding the utilization pattern of received monetary benefits under NPY and explore the determinants of correct utilization.

Methods:

It was a cross-sectional study conducted in all the TB units in Ahmedabad (32 TB units: 23 under the Ahmedabad Municipal Corporation (AMC) and 9 in the

Ahmedabad district region) between August 2023 and July 2024. The sample size was calculated using the formula:

$$N=4pq/L^2$$

where ‘p’ is the estimated proportion of NPY coverage (79.4%) as mentioned in the TB India report (2022)^[5] and ‘L’ represents the allowable margin of error (5%) at 95% confidence interval. To ensure adequate representation across all tuberculosis units, 15 patients were selected purposively from each tuberculosis unit, resulting in a total sample of 480.

Inclusion Criteria: Individuals who had received at least one instalment of the benefit were included in the study.

Exclusion Criteria: Individuals less than 18 years of age and those who declined to participate in the study were excluded.

Study Tool and Data Collection Technique

A pre-structured and pre-validated questionnaire was utilized for data collection. The questionnaire was administered through face-to-face interviews conducted in the local vernacular language. All responses were recorded using pen-and-paper method. The questionnaire gathered information on sociodemographic characteristics, food security status, clinical details and utilization pattern of NPY monetary benefit among study participants.

Food security was evaluated using Six-Item Short Form Economic research service.^[8] Participants reported their household food consumption over the preceding 12 months. The household’s raw score was determined total number of affirmative responses to the six items. A raw score of 0-1 indicated food security. Raw scores of 2-4 and 5-6 were classified as “low food security” and “very low food security,” respectively; both were categorized as food insecure. Although, the data collection tools were not subjected to pilot testing; however, their internal consistency was assessed using Cronbach’s alpha on collected study sample, yielding a value of 0.784, which indicates its acceptable reliability. Data was entered in Microsoft Excel and analysed through IBM Statistical Package for the Social Sciences (SPSS), version 27.

Ethical approval was obtained from the Institutional Review Board (IRB) (NHLIRB/2023/Jan/09/No.6), and necessary permissions were secured from the health departments of AMC and Ahmedabad district.

Statistical Analysis

Descriptive analyses were performed to summarize the sociodemographic characteristics, educational attainment, type of tuberculosis case and food insecurity status. Chi square statistics & univariate logistic regression was employed to assess statistically significant associations. All variables with p-value <0.05 in the univariate analysis were included and adjusted for in the multivariate logistic regression model to identify the predictors of correct benefit utilization.

Results:

A total of 480 patients were enrolled in the study. Most of the participants (250, 52%) were aged 21-40 years with a mean age of 37.34 years (SD ±16.5). The study population demonstrated a relatively balanced sex distribution, with 264 (55%) male and 216 (45%) female participants.

A majority, (370, 77.1%) of the participants had attained at least primary education, and 154 (32.1%) had completed higher secondary education or above. Nearly half (235, 49%) of the participants were financially dependent on their family members, including housewives, students and individuals who became unemployed after the diagnosis. Among those who were financially dependent, 40 (17%) were daily wage earner. A history of migration was reported by only 57 (11.9%) participants. Furthermore, 253 (52.7%) out of 480 participants belonged to the families facing food insecurity. (Table1)

Programmatic Characteristics and Direct Benefit Transfer Parameters of Study Participants

The majority of tuberculosis cases were pulmonary (360, 75%) and newly diagnosed (326, 68%). Most patients (432, 90%) were promptly registered in the Nikshay portal and initiated antituberculosis treatment on the same day as their diagnosis. Only 58 (12%) beneficiaries received full DBT amount corresponding to the duration of their treatment. Although bank account

Table 1: Sociodemographic Characteristic of Study Participants (N=480)

Characteristics	Categories	Frequency (%)
Age groups (in years)	<20	44 (9.2)
	21-40	251 (52.3)
	41-60	149 (31)
	>60	36 (7.5)
	Mean=37.3±16.6 years	Median=35 years
Gender	Male	264 (55)
	Female	216 (45)
Migration history	Yes	57 (11.9)
	No	423 (88.1)
Education	Graduate/ Post graduate	80 (16.7)
	Higher secondary	74 (15.4)
	Secondary	78 (16.3)
	Primary	138 (28.8)
	Illiterate	110 (22.9)
Financial Dependency	Yes	235 (49)
	No	245 (51)
Change in occupation (became unemployed)	Yes	56 (11.7)
	No	214 (44.6)
	NA	210 (43.8)
Addiction	Yes	106 (22.1)
	No	374 (77.9)
Household with food insecurity	Yes	253 (52.7)
	No	227 (47.3)
Type of TB	Newly Diagnosed	324 (67.5)
	Previously treated	156 (32.5)

ownership was nearly universal among participants, 144 (30%) reported using a relative’s bank account to receive benefits.

Utilization Pattern of Direct Benefit Transfer by Study Participants

Among 480 participants, 289 (60%) indicated that financial benefit received through DBT was correctly spent on food purchases while 105 (22%) utilized the benefit for non-food-related expenses, including house rent, clothing, recreational activities and other household needs. Among remaining participants, 80 (17%) were unaware that the benefit had been deposited into their accounts, however 6 (1%) participants were

aware of the funds but did not utilize them. Since, 86 (18%) participants were unaware of the deposit and did not use the money, they were excluded from the analysis to identify the pattern and predictors of the utilization of NPY for nutritional purpose. A significant association

was found between correct utilization of benefit for food purchases and factors such as age over 35 years ($\chi^2=4.210$; $p=0.04$), a history of previously treated TB years ($\chi^2=30.784$; $p<0.001$) and presence of food insecurity ($\chi^2=13.473$; $p<0.001$). (Table 2)

Table 2: Association of Different Factors with the Utilization of the DBT under NPY Scheme (N=394)

Variable	Category	Utilized for	Utilized for other	Chi square	p value
		food (N=289)	activities (N=105)		
		n (%)	n(%)	(χ^2) value	
Age Group (Years)	≤ 35	148 (69.2)	66 (30.8)	4.210	0.04
	>35	141 (78.3)	39 (21.7)		
Gender	Male	171 (75)	57 (25)	0.753	0.385
	Female	118 (71)	48 (29)		
Migration history	Yes	47 (82.5)	10 (17.5)	2.827	0.09
	No	242 (72)	95 (28)		
Education	Illiterate	58 (76.3)	18 (23.7)	0.424	0.515
	Literate	231 (72.6)	87 (27.4)		
Financial Dependency	Yes	137 (71)	56 (29)	1.083	0.298
	No	152 (75.6)	49 (24.4)		
Type of TB case	Newly diagnosed	177 (65)	95 (35)	30.784	<0.001
	Previously treated	112 (92.8)	10 (8.2)		
Addiction	Yes	61 (72.6)	23 (27.4)	0.029	0.864
	No	228 (73.5)	82 (26.5)		
Food insecurity	Present	165 (81.3)	38 (18.7)	13.473	<0.001
	Absent	124 (65)	67 (35)		

Table 3: Predictors for Utilization of Monetary Benefit under NPY (N=394)

Variable	Utilization of Monetary Benefits of NPY		COR (95% CI)	AOR (95% CI)	P value	
	Food	Other activities				
	(N=289)	(N=105)				
		n (%)	n (%)			
Age Group (years)	≤35	148 (69.1)	66 (30.9)	1 (Referent)	1 (Referent)	0.051
	>35	141 (78.3)	39 (21.7)	0.602 (0.392-0.981)	1.622 (0.998-2.635)	
Type of TB	Previously treated	112 (91.8)	10 (8.2)	1 (Referent)	1 (Referent)	<0.001
	Newly diagnosed	177 (65)	95 (35)	0.166 (0.083-0.333)	0.164 (0.081-0.330)	
Food Insecurity	Absent	124 (65)	67 (35)	1 (Referent)	1 (Referent)	<0.001
	Present	165 (81.3)	38 (18.7)	2.346 (1.479-3.721)	2.322 (1.432-3.764)	

COR was determined using univariate binary logistic regression. For each independent variable which showed significant association in univariate analysis, the AOR was calculated after adjusting for other independent variables. COR: Crude odds ratio, AOR: Adjusted odds ratio, CI: Confidence interval

As shown in Table 3, the type of tuberculosis case and household food security status were found to be the predictors of correct (intended) utilization of monetary benefit. After adjusting for other covariates, newly diagnosed tuberculosis patients were significantly less likely to utilize the benefit for food purchases compared to those with history of previous tuberculosis treatment (adjusted odds ratio [AOR]: 0.164; 95% CI: 0.081-0.330; $p < 0.001$). Additionally, participants experiencing household food insecurity were significantly more likely to use the financial assistance for food purchases (AOR=2.322; 95% CI: 1.432-3.764; $p < 0.001$) as compared to food secure households.

Discussion:

Majority of the study participants (52.3%) were aged between 21 to 40 years, with males comprising 55% of the sample which was in contrast with the findings of Rabeensa KT *et al*^[9] where majority (47%) of the participants belonged to the age group 31-50 years and 65% of the participants were males. In the present study, 22.9% of the participants were illiterate which was somewhat different from the findings by Barve *et al*^[10] and Rabeensa KT *et al*^[9] where 14% of the participants were illiterate. The present study had 67.5% of the participants being newly diagnosed TB patients which was different to the findings by Rabeensa KT *et al*^[9] where 84% of the participants were newly diagnosed TB patients. This study provides valuable insights into the pattern and predictors of utilization of the monetary benefits received by tuberculosis patients.

Among the 394 participants who utilized the funds, 289 (73%) reported using money exclusively for nutritional purposes which was consistent with the findings by Barve *et al*^[10] and Rabeensa KT *et al*^[9] where 71% and 73% of the participants utilized the monetary benefits for nutritional purposes respectively but differing from those reported by Kavimalar T *et al*^[11] where just 26% of the participants used the benefits for nutritional supplementation.

Of the total participants, a mere 12% of them received the full benefit corresponding to their treatment duration, the remainder received only a partial amount. It

was in contrast to the findings by Kavimalar T *et al*^[11] where 20% of the participants received the full benefit. The lack of notification services by the banking institution and limited access to passbook records resulted in 80 (17%) participants being unaware that financial benefits had been deposited into their bank accounts which is consistent with the findings of a previous study conducted by Bakhru D *et al*^[12], where 30% of the participants were unaware about the receipt of NPY benefits.

This study indicated that 253 (53%) participants i.e. more than 50% of the patients experienced food insecurity which contrasts with the findings of a previous study conducted by Ayiraveetil R *et al*^[13] where 34.1% participants experienced household food insecurity which indicated that approximately one-third of the tuberculosis patients experienced food insecurity at the time of diagnosis. This study was one of its kind where previously diagnosed TB patients and food insecurity were found to be the main predictors of utilization of funds for nutritional purposes. This finding can be supported by the fact that recent diagnosis of TB in individuals is often linked with fear, stigma, unawareness and anxiety often leading to confusion regarding the purpose of received monetary benefits thus leading to its utilization for needs other than nutritional supplementation. Similarly, food insecurity fundamentally being a household-level issue, often results in financial benefits getting distributed among family members, potentially reducing the allocation exclusively for individual patient's nutritional needs. Therefore, direct referral pathways to programs like Pradhan Mantri Tuberculosis Mukh Bharat Abhiyaan, could be beneficial.^[14]

Though not included in our study objectives, key implementation challenges identified included budget constraints and procedural delays for program staff. Additionally, patients frequently encountered issues related to bank accounts, with both healthcare providers and patients reporting problems due to insufficient documentation.

Limitation:

This study focused only on purposively selected participants of all TB units in Ahmedabad. Thus, it does not have fair representation of all the TB patients overall in determining the utilization pattern. Information gathered was primarily based on respondent's point of view, which may have recall bias.

Conclusions:

The study provides an assessment of utilization patterns, and determinants influencing the use of monetary benefits provided under NPY among TB patients in Ahmedabad district. The financial benefit received under NPY was primarily utilised for meeting the nutritional needs by 289 (60%) of the participants, while 105 (22%) utilized the benefit for non-food-related expenses. Food insecurity (AOR: 2.322; $p < 0.001$) and the type of TB case (AOR: 0.164; $p < 0.001$) were the main predictors of correct utilization of the monetary benefits which highlights the need of prior education about NPY for intended utilization of the benefits for nutritional supplementation.

Recommendation:

Targeted educational interventions and counselling by service providers like TB health visitor, field level workers at the time of diagnosis and throughout the treatment course can empower patients and their caregivers to allocate & utilize benefits appropriately contributing to improved nutritional status, treatment adherence and successful tuberculosis outcome.

Declaration

Funding: Nil

Conflict of Interest: Nil

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