"AWARENESS AND UTILISATION OF 'PATIENT SUPPORT SYSTEMS' AMONG PATIENTS DIAGNOSED WITH TUBERCULOSIS IN AN URBAN AREA

- A DESCRIPTIVE STUDY"

Submitted by

(REG. NO. BD0122002)

Dissertation

Submitted to KAHER,

Belagavi, Karnataka,
In partial fulfilment of the requirements for the degree of

M. D. (Doctor of Medicine)
In
COMMUNITY MEDICINE

DEPARTMENT OF COMMUNITY MEDICINE,
JAWAHARLAL NEHRU MEDICAL COLLEGE, KAHER,
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MARCH 2025

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LITS OF ABBREVIATIONS USED

SL.NO	ABBREVIATIONS	EXPANSION OF THE ABBREVIATIONS
1	TB	Tuberculosis
2	WHO	World Health Organization
3	UTC	Urban Tuberculosis Center
4	NTEP	National Tuberculosis Elimination Plan
5	HIV	Human Immunodeficiency Virus
6	NPY	Nikshay Poshan Yojana
7	PSS	Patient Support Systems
8	MoHFW	Ministry of Health and Family Welfare
9	NHM	National Health Mission
10	DBT	Direct Benefit Transfer
11	IQR	Interquartile Range
12	CI	Confidence Interval
13	DMC	Designated Microscopy Center
14	TU	Tuberculosis Unit

15	USD	United States Dollar
16	HCA	Health Care Access
17	INR	Indian Rupee
18	HFI	Household Food Insecurity
19	ASHA	Accredited Social Health Activist
20	DRTB	Drug-Resistant Tuberculosis
21	DOTS	Directly Observed Treatment, Short-course
22	PwTB	Persons with Tuberculosis
23	OR	Odds Ratio
24	LTFU	Loss to Follow-Up
25	PPSA	Private Provider Support Agency
26	DTC	District Tuberculosis Center
27	IBM	International Business Machines
28	SPSS	Statistical Package for the Social Sciences
29	PUC	Pre university course
30	UIDAI	Unique Identification Authority of India
31	MDRTB	Multidrug-Resistant Tuberculosis

32	XDRTB	Extensively Drug-Resistant Tuberculosis
33	SC	Scheduled Caste
34	ST	Scheduled Tribe
35	OBC	Other Backward Class
36	SES	Socioeconomic Status
37	BPL	Below Poverty Line
38	APL	Above Poverty Line
39	ITI	Industrial Training Institute
40	AWW	Anganwadi Worker
41	CPR	Consumer Price Index
42	PDS	Public Distribution System
43	IEC	Information, Education and Communication
44	BCC	Behavior Change Communication
45	FGD	Focus Group Discussion
46	IDI	In-Depth Interview

ABSTRACT

"AWARENESS AND UTILISATION OF 'PATIENT SUPPORT SYSTEMS' AMONG PATIENTS DIAGNOSED WITH TUBERCULOSIS IN AN URBAN AREA: A DESCRIPTIVE STUDY."

INTRODUCTION:

Tuberculosis is a major public health challenge and India has the highest burden of tuberculosis (TB), with a reported incidence of 199 per lakh population in 2022. The National Strategic Plan (NSP) 2017-2025 has articulated the need for "Patient Support Systems" to limit and eliminate out-of-pocket (OOP) expenditures during the treatment, support patient's nutritional needs through financial incentives and create linkages to other social welfare schemes. To reduce malnutrition among patients suffering from TB, the government of India launched the Nikshay Poshan Yojana, a Direct Benefit Transfer scheme under National Tuberculosis Elimination Program (NTEP) in 2018, offering a monthly incentive of INR 500 to each patient enrolled under the program till they complete their treatment.

OBJECTIVES:

1) To assess the awareness and utilisation of 'Patient support systems' among patients diagnosed with Tuberculosis registered under the urban TB unit of Belagavi.
2) To assess the treatment outcomes among the TB patients.

MATERIAL AND METHODS:

A facility based descriptive study was conducted among 400 persons with Tuberculosis (PwTB) in an urban area of Belagavi by using systematic random sampling from 1st April 2023 to 31st March 2024 (12 months), using a predesigned and structured questionnaire. Collected data was entered in Microsoft Excel sheet and analysed by IBM SPSS software version 20. Data was analysed in percentages and Chi-square test was used to assess associations between dependent and independent categorical variables, with 95% confidence interval ($p < 0.05$).

RESULTS:

Among the 400 study participants, 274 (68.5%) participants were males, 227 (56.8%) participants were in the age group 18-39 years, 144 (36%) participants had completed high school, 297 (74.3%) participants were married, 243 (60.8%) participants were unemployed, 344 (86%) participants belonged to Hindu religion and 160 (40%) participants belonged to class III socio-economic status.

Out of 400 participants, 317 (79.3%) had poor awareness of patient support systems, 45 (11.3%) had average awareness, and only 38 (9.5%) had good awareness. Increasing age ($p=0.001$, $\chi2 = 18.382$), type of TB ($p=0.028$, $\chi2 = 10.41$) and having a nuclear family ($p=0.024$, $\chi2 =13.379$) were significantly associated with awareness level. Marital status ($p=0.254$, $\chi2 = 8.999$), religion ($p=0.732$, $\chi2 = 1.841$), occupation ($p=0.340$, $\chi2 = 2.163$) and socio-economic status ($p=0.612$, $\chi2 = 6.243$) were not found to be significantly associated with level of awareness. Pulmonary TB was the most common type (76.3%) across all age groups.

Regarding utilization of patient support systems, 232 (58%) participants did not utilize patient support systems, while 168 (42%) participants did access these services. Among them, 256 (64.0%) participants had poor utilization, 68 (17%) had average utilization, and only 76 (19%) had good utilization. Utilization of services was found to be significantly associated with age ($p = 0.016$, $\chi^2 = 12.419$), type of TB ($p = 0.010$, $\chi^2 = 13.442$), and awareness level ($p < 0.001$, $\chi^2 = 41.087$). No significant association was found between utilization and marital status ($p = 0.298$, $\chi^2 = 3.742$), religion ($p = 0.543$, $\chi^2 = 2.117$), occupation ($p = 0.110$, $\chi^2 = 4.436$), or socio-economic status ($p = 0.492$, $\chi^2 = 5.186$).

CONCLUSION:

More than two-thirds of the study participants had poor awareness of Patient Support Systems (PSS), with only a small proportion demonstrating good awareness. Similarly, while more than half of the participants had poor level of utilization of these support systems, only a few made full use of them. Factors such as increasing age, caste, and the presence of comorbidities were significantly associated with awareness and utilization of PSS. However, gender, occupation, marital status, socio-economic status, and type of tuberculosis were not associated with awareness and utilisation of PSS.

KEYWORDS: Tuberculosis, Patient Support Systems, Nikshay Poshan Yojana, Direct Benefit Transfer, Nutrition

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INTRODUCTION

Tuberculosis (TB) is a contagious disease caused by the bacillus Mycobacterium Tuberculosis that primarily affects the lungs, and it is transmitted through the air when an infected individual coughs or sneezes.[1] A German Doctor, Johan Lukas Schoenlein coined the term "Tuberculosis" in 1834, the word comes from a Latin word "Tuber" which means "Potato".[2] Tuberculosis remains a major public health concern despite the fact that the causative agent was discovered more than a century ago and highly effective drugs and vaccine are available making tuberculosis a preventable and curable disease.[3]

As per the WHO Global Tuberculosis Report 2024, an estimated 10.8 million people fell ill with tuberculosis (TB), and a total of 1.25 million people died from TB in 2023. The global incidence rate was 134 per lakh population in 2023. Thirty high TB burden countries accounted for more than 87% of the world's TB cases and two thirds of the global total was in eight countries, namely: India, Indonesia, China, Philippines, Pakistan, Nigeria, Bangladesh and the Democratic Republic of Congo.[1] India has the highest burden of TB with reported incidence of 199 per lac population in 2023.[6]

TB not only affects physical health, but also social, economic and psychological wellbeing.[7] The Government of India policy is to provide "free" diagnosis and treatment to all registered TB cases; these include basic medical tests and anti-TB medications. Patients pay 'out of pocket' for several components such as consultation fees, non-TB drugs, other diagnostic tests, travel expenses during the treatment period and pre-treatment period. Since the disease affects the economically productive age group, households are adversely affected. The social repercussions include loss of work, divorce, exclusion by family members and the local community, and loss of housing.[8] Approximately, 50% of TB patients and their families

pay for all associated expenses, including direct medical costs, non-medical costs, and indirect costs like income loss which is catastrophic. This demonstrates that there are significant financial and economic obstacles to receiving and finishing TB treatment, which must be removed by accelerating the transition to UHC and improving social protection levels.[6]

TB is a disease that disproportionately affects marginalized populations. Patients often face challenges such as poor nutrition, lack of awareness, and inability to sustain treatment due to financial hardship. Patients, particularly those in low-income groups, struggle to complete the lengthy TB treatment regimen due to side effects, lack of motivation, and socio-economic stress. Despite NTEP's focus on improving diagnostic capabilities, access to quality diagnostic services was inconsistent, especially in rural and remote areas. Malnutrition is both a risk factor and a complication for TB. Poor nutritional status weakens immunity and increases the likelihood of poor treatment outcomes. More than 50% of TB patients face significant stigma, leading to delays in seeking care and difficulty in adhering to treatment protocols. Despite free diagnostic and treatment services, indirect costs such as transportation, lost wages, and nutritional needs posed a significant burden on TB patients and their families. Gaps in coordination between healthcare providers, inadequate monitoring of treatment outcomes, and lack of patient-centric care hindered the effectiveness of the program.[6]

The estimated incidence of all forms of tuberculosis (TB) in India in 2022 was 2.7 million cases. India has the highest burden of TB in the world, accounting for a quarter of the global total. The estimated mortality rate among all forms of tuberculosis (TB) in India in 2022 was approximately 380,000 deaths. To officially end TB by 2025, NTEP has directed 18 states to create State Specific Strategic Plans. They have gone one step further and created a District-specific Strategic Plan, which will act as a guiding document for the programme managers and staff at the district and sub-district level towards the elimination of Tuberculosis. The

significant burden of TB in India is compounded by the dual existence of food insecurity and undernutrition, signifying the necessity of facilitating nutritional support to TB patients. Karnataka is one of the high HIV-TB burden states and is currently implementing NTEP's National Strategic Plan 2017-'25 with the goal of 'Universal Access to Quality Diagnosis and Treatment for all TB patients' in the community.[6]

The "Patient Support Systems" (PSS) are designed to provide assistance to Tuberculosis patients during treatment. This support includes incentives, nutritional aid, and connections to other social welfare programs. The PSS strategy outlined in the 'National Strategic Plan' aligns with the increasing focus on achieving Universal Health Coverage in India. Under the 'National TB Elimination Programme' following schemes are currently ongoing: Nikshay Poshan Yojana (NPY), Transport support for TB patients in notified tribal areas, Honorarium for Treatment Supporters and Notification & Treatment Outcome Incentive for Private Sector Providers. The Ministry of Health and Family Welfare, Government of India has announced the 'Nikshay Poshan Yojana', a centrally sponsored nutritional support scheme under the National Health Mission (NHM) for nutritional support to TB patients notified on or after 1st April 2018 at NIKSHAY portal (www.nikshay.in). Approximately, INR 3,649 crores have been paid to 12.4 million TB patients under Nikshay Poshan Yojana (NPY) from 1st April 2018 to 28th February 2024. In October 2024, the monthly nutritional support provided to TB patients was increased from INR 500 to INR 1000 per patient per month for the duration of their treatment. Therefore, it is utmost important that the basic information about TB and the services provided under the various government programmes is clear in the community.[6]

Although 'Patient Support Systems' (PSS) are recognized for their potential to improve tuberculosis (TB) treatment outcomes, there is still a lack of clear evidence on how TB patients perceive and use these services. In particular, the various barriers—whether socio-economic,

cultural, or systemic—that may prevent patients from engaging effectively with PSS have not been fully explored. To address this gap, our study aimed to evaluate both the awareness and actual use of PSS among registered TB patients, while identifying the obstacles that hinder their effective utilization. The insights from this research are intended to guide the development of targeted interventions that can enhance PSS uptake, thereby improving adherence to TB treatment and overall patient outcomes.

OBJECTIVES OF THE STUDY

1. To assess the awareness and utilisation of ‘Patient support systems’ among patients diagnosed with Tuberculosis registered under the urban TB unit of Belagavi
2. To assess the treatment outcomes among the TB patients.

REVIEW OF LITERATURE

The WHO Global Tuberculosis Report 2024 highlights how TB continues to affect millions of people around the world, especially those who are poor, malnourished and socially disadvantaged. Even though some progress has been made since the COVID-19 pandemic, many TB-affected households are still struggling with financial hardship while trying to access treatment. In many places, only a small number of patients are able to benefit from patient support systems like nutritional aid or financial incentives. The report stresses how important it is to have strong patient support systems in place—like direct benefit transfers and Nikshay Poshan Yojana to help people stay on treatment and complete it successfully. It also calls for greater involvement of communities and patients in the TB response, showing that these support systems are not just helpful but essential for ending TB.[1]

India's National Tuberculosis Elimination Programme (NTEP), launched as an evolution of the Revised National Tuberculosis Control Programme (RNTCP), has made significant progress toward the country's goal of eliminating TB by 2025. Recognizing that TB is not only a medical condition but a deeply social disease, the programme has shifted towards a more inclusive and patient-centric model of care. One of the key pillars of this shift is the implementation of Patient Support Systems (PSS)—interventions designed to support TB patients financially, nutritionally, emotionally, and socially throughout the course of treatment.

Among the first and most impactful of these systems is the Nikshay Poshan Yojana (NPY), launched in April 2018, which offers a monthly financial incentive of ₹500 to all notified TB patients through Direct Benefit Transfer (DBT). In October 2024, the NPY amount was increased to ₹1,000 per month, aiming to provide ₹3,000 to ₹6,000 per patient depending

on the treatment duration. This amount is intended to help patients meet their nutritional needs and reduce the financial strain caused by loss of income during treatment. As per the India TB Report 2024, nearly ₹2,781 crores were disbursed to about one crore TB patients through NPY, though only 70% of eligible beneficiaries actually received it—pointing to ongoing challenges in outreach, awareness, and banking access. According to Nikshay website data (October 2024), cumulative disbursement under NPY had reached ₹3,202 crores to 1.13 crore beneficiaries since inception.

To complement financial aid, NTEP has started community-driven initiatives aimed at improving engagement and continuity of care. The Pradhan Mantri TB Mukt Bharat Abhiyaan (PMTBMBA), launched in 2022, introduced the Ni-kshay Mitra programme, through which individuals, NGOs, corporations, and institutions can "adopt" TB patients. These Mitras provide essential nutrition kits, hygiene materials, and motivational support. As of March 2024, over 1.5 lakh Ni-kshay Mitras were actively supporting patients across the country. Alongside them, Ni-kshay Saathis—typically family members or close caregivers—offer everyday physical and emotional support, while TB Vijetas (recovered TB patients) play a vital role in motivating current patients by sharing personal recovery stories and helping reduce stigma.

At the grassroots level, ASHAs, Anganwadi Workers, and community health workers remain the backbone of psychosocial support. They assist with counselling, monitor treatment adherence, and help patients navigate the health system. States like Kerala, Tamil Nadu, Telangana, and Chhattisgarh have enhanced the reach of PSS by linking TB patients to wider social welfare schemes. These include pensions for low-income households, travel cost waivers for clinic visits, in-kind nutritional support such as dry ration kits, housing assistance, and even vocational rehabilitation for patients who cannot return to work after treatment. Kerala's Treatment Support Groups (TSGs), led by Panchayat presidents and community volunteers,

are a notable example of local governance playing a direct role in patient recovery by offering sustained, personalized support throughout the treatment journey.

In Karnataka, similar efforts have been undertaken to support TB patients. The state has integrated the National Tuberculosis Elimination Programme (NTEP) with its health insurance scheme, Ayushman Bharat-Arogya Karnataka (AB-ArK), to provide comprehensive health coverage to TB patients. This integration ensures that patients receive free diagnostic and treatment services, reducing the financial burden associated with TB care. Additionally, Karnataka has implemented the Nikshay Poshan Yojana (NPY), providing direct benefit transfers to TB patients for nutritional support. However, challenges such as delays in fund disbursement and issues with bank account linkages have been reported, affecting the timely receipt of these benefits. To address these challenges, the state has focused on streamlining processes and improving awareness among patients about their entitlements. Furthermore, collaborations with non-governmental organizations like the Karnataka Health Promotion Trust (KHPT) have facilitated community-based, patient-centric models aimed at improving health-seeking behaviours, access to healthcare services, and better treatment outcomes among vulnerable populations. These initiatives collectively contribute to a more supportive environment for TB patients, addressing both medical and socio-economic aspects of their care.

Together, these multi-layered patient support systems are transforming TB care in India from a purely clinical approach to a more compassionate and inclusive framework. They not only aim to improve treatment outcomes and reduce default rates but also acknowledge the lived realities of TB patients—poverty, stigma, poor nutrition, and psychological distress. However, the true potential of these systems can only be realized if awareness and accessibility are enhanced, especially in urban, underserved, and migratory populations. Continued

evaluation, education, and intersectoral collaboration remain key to bridging these gaps and achieving the vision of a TB-free India by 2025.[6]

A mixed methods study was conducted in city TB Centre, Vadodara, Gujarat in 2018 to assess the coverage and explore enablers and challenges in implementation of direct benefit transfer (DBT) cash incentive scheme for patients with tuberculosis (TB). Among 1,826 patients, 771 (42.2%) had received at least one instalment. Significantly more patients from the public sector had received DBT (at least one instalment) compared with those from private sector (adjusted relative risk (adj RR) =16.3; 95% CI 11.6 to 23.0). Among public sector patients, 7.3% (49/671) had received first instalment within two months of DOTS treatment initiation. Median (IQR) time to receipt of the first instalment was 5.2 (3.4, 7.4) months. Treatment in the private sector (IQR 5.9 to 9.5), residing outside city limits (IQR 6.0 to 10.1) and being HIV non-reactive (IQR 3.2 to 7.2) were significantly ($p<0.001$) associated with longer time to receipt the benefit transfers.[9]

A retrospective cross-sectional study was conducted among TB patients in 2019 at Srikakulam district. Two DMCs in each of the 2TU (randomly selected from 12 TUs) were selected and among them 83 patients responded to telephonic interviews out of all patients registered in the last six months. The demographic details were collected from TB treatment cards and registers and other information by telephonic interview of 10–15 minutes each conducted over a period of 15–20 days. The study revealed that 41% were 40–60 years of age. A total of 76 patients (91.5%) were aware of the scheme but only 17 patients (22.4%) had received their first instalment after two months in their bank account. Among the 17 who faced difficulty while getting the money, 13 TB patients (76%) spent it on nutrition.[10]

A cross-sectional study was conducted in 2018 among patients registered for TB treatment under DOTS centre in Delhi. There were 119 patients registered for TB treatment from 1st July 2018 to 30th September 2018. Information on utilisation of NPY from patients who had received incentives through DBT was collected. Reasons for receiving and not receiving the financial incentive and utilisation of incentives amongst those who received it, were explored. Out of 57 participants, 20 had provided wrong addresses, 11 refused for interview and one patient had died. Of the 57, only 52.6% (30) had received Nikshay Poshan Yojana incentive.[11]

A retrospective cohort study among 426 (98% response rate) patients with drug-sensitive pulmonary TB on treatment in 2019 to determine the association between DBT and treatment outcomes found that 299 (70%) got cured, 89 (21%) completed treatment, 23 (6%) died while on treatment, 10 (2%) were lost to follow up and 5 (1%) were treatment failure. Nine percent of the patients did not receive DBT, 46% received the first instalment late and 49% received the last instalment after their treatment completion. The median (IQR) days after initiation of treatment to receive the first instalment was 56 (33-86), and to receive the last instalment was 176 days (157-199). The median (IQR) days for receipt of the last instalment after treatment completion was 24 (11-52) days. Non-receipt of DBT was associated with a 5 (95% CI: 2-12) times higher odds of unfavourable treatment outcomes on multivariable analysis. [12]

A sequential explanatory mixed-methods study was conducted in Bhavnagar, Gujarat, to assess the costs incurred by patients with tuberculosis (TB) comorbid with diabetes from 2017 to 2020. The study included 304 patients registered in the public health system, with the aim of estimating both direct and indirect costs. The median monthly family income was INR 9,000 (~US$ 132), and the median total costs incurred due to TB-diabetes comorbidity were

INR 1,314 (~US$ 19), which nearly doubled the median costs due to TB alone (INR 618, ~US$ 9). Catastrophic costs, defined as those exceeding 20% of annual household income, affected 4% of patients due to TB and increased to 5% when diabetes-related costs were added. The study found that travel costs, wage losses, and private sector treatment expenses were significant ($\chi^2 = 4.21$, $p = 0.040$) contributors to the financial burden.[13]

A cohort study was conducted between 2019 and 2023 aimed to estimate the social support requirements for tuberculosis (TB) patients in India, with a specific focus on the 'Nikshay Poshan Yojana' (NPY) cash benefit. The study interviewed 1,482 adult drug-susceptible TB patients across 16 districts in four states (Assam, Maharashtra, Tamil Nadu, and West Bengal). Among the participants, 31–54% received the NPY benefit, with 5–11% of participants receiving the full benefit amount of INR 3,000 by the end of treatment. The median NPY benefit received varied across different regions: INR 1,000 for tea garden residents, INR 1,500 for urban slum dwellers, and INR 2,000 for the general population. Despite receiving the benefit, 2% of study participants were able to stay below the catastrophic cost threshold. 16% of tea garden residents did not withdraw the benefit due to travel-related challenges, and 14% of the general population and 16% of urban slum dwellers were unaware of receiving the benefit. The study found that approximately 34–60% of participants faced catastrophic costs using the HCA (Human Capital Approach) method of indirect cost calculation, with a statistically significant difference in the incidence of catastrophic costs between groups ($\chi^2 = 14.88$, $p<0.001$). The NPY benefit helped only 2% of participants reduce these costs. The researchers estimated that increasing the benefit amount to INR 10,000 for the entire six-month treatment period could reduce catastrophic costs for 43% of the participants, with higher amounts (INR 20,000 and INR 30,000) further improving outcomes, pushing patients below

the catastrophic cost threshold. These differences in cost reduction were also statistically significant ($\chi^2 = 12.81$, $p<0.001$).[14]

A cross-sectional study conducted during 2015 to 2018 assessed household food insecurity (HFI) among patients with pulmonary tuberculosis (TB) in three districts of South India under the National Tuberculosis Programme (NTP). Out of 765 participants, 261 (34.1%) experienced HFI, with 23.1% facing severe food insecurity. Factors significantly associated with HFI included having a monthly family income less than INR 3000 (adjusted prevalence ratio (aPR) 2.0; 95% CI 1.3 to 3.0, $p<0.001$), a Karnofsky Score of 60 or less (aPR 1.5; 95% CI 1.1 to 1.9, $p<0.001$), and employment status (aPR 1.4; 95% CI 1.0 to 2.0, $p<0.001$).[15]

A descriptive study was conducted in 2023 in Bangalore, India. The study assessed the utilization of the Nikshay Poshan Yojana scheme among tuberculosis (TB) patients registered in a designated microscopy centre. A total of 137 TB patients were included, of whom 116 (85%) consented to participate. The study revealed that 83 (71.5%) participants received financial incentives under the scheme, with 61 (73%) utilizing the benefits for nutritional purposes. Among the participants, 43 (37%) belonged to the middle class as per the modified BG Prasad scale, and 75 (65%) were males. Challenges such as untimely distribution of funds were observed, with 33 (28%) participants reporting that they did not receive incentives.[16]

A cross-sectional study conducted in 2022 in Reasi, Jammu & Kashmir, India. This study evaluated the utilization of the Nikshay Poshan Yojana in two tuberculosis units. A total of 189 newly diagnosed TB patients were included, with 133 patients participating in telephonic interviews. Results showed that all patients received financial incentives, but only 26 (13.7%) received the incentives on time. Of those interviewed, 85 (64%) used the incentives

entirely for nutritional purposes. The study highlighted significant delays in fund disbursement and the need for counselling on the importance of nutrition during treatment.[17]

A cohort study was conducted during 2020-21 in India examined the impact of COVID-19 restrictive measures on income and health service utilization of tuberculosis (TB) patients during the nationwide lockdown from March to June 2020. The study involved 291 TB patients, with 89 from the general population and 202 from tea garden areas. The study revealed that 51% of households in the general population and 26% of households in tea garden areas had zero monthly income during the complete lockdown period (April–May 2020) ($\chi^2 = 12.44$, $p<0.001$). Income loss showed a slow recovery, with 44% of households in the general population and 37% in tea garden areas still suffering income losses by January–February 2021 ($\chi^2 = 4.89$, $p<0.001$). The study found that 7% of patients in the general population and 4% in tea garden areas discontinued their TB medications during the lockdown period ($\chi^2 = 6.55$, $p<0.001$). The lockdown had a significant impact on TB drug pickup, with travel and related expenses increasing for patients in tea garden areas due to the nonavailability of public transport (INR 13,500 pre-lockdown vs INR 38,000 during lockdown) ($\chi^2 = 7.88$, $p<0.001$).[18]

A retrospective cohort study conducted during 2022 to 2023 at the Nodal DR-TB Centre, Darbhanga Medical College, Bihar evaluated the impact of different types of treatment supporters on the outcomes of drug-resistant tuberculosis (DR-TB) patients. The study included 1,095 DR-TB patients, with 62.83% being females. The study revealed that treatment outcomes were significantly better for patients supported by Accredited Social Health Activists (ASHAs). Among patients with ASHA support, 33.28% achieved a "cured" status, compared to 30.68% with family member support and 25% with community health worker support ($\chi^2 = 14.77$, $p<0.001$). The rate of patients lost to follow-up was lowest among ASHA-supported patients (13.90%) compared to those supported by family members (13.70%) and community

health workers (14.81%) ($p<0.001$). The study also observed that patients supported by ASHAs had the least number of transfers out (1.29%) compared to family members (2.74%) and community health workers (12.03%) ($\chi^2 = 12.79$, $p<0.0001$).[19]

A systematic review was conducted from 2006 to 2016 to evaluate patient support interventions for tuberculosis (TB) patients in low-incidence countries. The review included 40 publications, of which 17 quantitatively assessed patient support and 9 qualitatively evaluated its effects. The study found that treatment supervision (directly observed therapy, DOT) was the most common intervention, appearing in 36 publications, and was associated with a higher treatment success rate. Of the studies evaluating patient support quantitatively with a control group, four studies showed positive effects: two of three studies combining patient support with DOT and two of five studies focusing on different treatment supervision options ($\chi^2 = 7.55$, $p<0.001$).[20]

An observational study was conducted in 2023 in Indonesia, the study aimed to identify determinants of adherence to pulmonary tuberculosis (TB) medication. The study included 37 TB patients, with 22 (59.5%) patients compliant with their medication and 15 (40.5%) non-compliant. The study used the Chi-square test and found that there was a significant relationship between knowledge ($p=0.009$; 95% CI 1.511-30.159; PR=0.4), family support ($p=0.022$; 95% CI 1.213-21.434; PR=0.47), and health worker support ($p=0.025$; 95% CI 1.121-39.660; PR=0.36) with medication adherence. There was no significant relationship between patient motivation and access to health services ($p=0.842$ and $p=0.923$, respectively). The study highlighted that health worker support was the most dominant factor influencing medication adherence, with individuals receiving good support being 3.6 times more likely to be compliant compared to those with poor health worker support (OR=3.592; $p<0.05$).[21]

A cross-sectional study was conducted in 2022 to analyse the receipt and utilization of the Nikshay Poshan Yojana (NPY) among persons with tuberculosis (PwTB) notified under the National TB Elimination Program (NTEP) in India. The study found that 92.7% of the 3,201 PwTB received at least one NPY instalment, but the median time to receipt of the first instalment was 105 days (IQR 60–174 days). Delays in receiving the benefit were significantly higher among PwTB from low TB score states (adjusted prevalence ratio (aPR) = 2.34; 95% CI 1.51, 3.62), those without a bank account (aPR = 2.48; 95% CI 1.93, 3.19), and those with unknown or missing diabetic status (aPR = 1.69; 95% CI 1.11, 2.55). The study also revealed that 64.2% of PwTB self-reported receiving at least one instalment, and 79.4% of recipients used the benefit for nutrition. 86.6% of respondents reported that the benefit was insufficient to meet their nutritional requirements. Non-receipt of NPY was significantly associated with unfavourable treatment outcomes (aPR 4.93; 95% CI 3.61, 6.75). The amount of NPY benefit received ranged from INR 500 to INR 10,500, with a median of INR 3,000.[22]

A mixed methods systematic review and meta-analysis conducted in 2023 examined the effectiveness of psychosocial support interventions for people living with tuberculosis (TB). The study included 23 studies (12 quantitative, 10 qualitative, and 1 mixed-methods), primarily conducted in low- and middle-income countries. The review found that interventions providing a combination of material and psychological-based support were most effective in improving treatment success, with odds ratios (OR) of 2.46 (95% CI 1.89–3.22) for treatment success and 0.30 (95% CI 0.10–0.92) for reducing loss to follow-up (LTFU) ($p<0.001$). The meta-analysis also revealed that financial support interventions (e.g., INR 1,500 conditional cash transfers) had a significant impact on treatment success (OR 2.11, 95% CI 1.45–3.06, $p<0.001$) and reduced LTFU (OR 0.49, 95% CI 0.34–0.73, $p<0.001$).[23]

An observational study conducted in 2021 in Jharkhand, India, explored the perspectives of private practitioners on barriers and facilitators in availing tuberculosis (TB) care cascade services. The study found significant delays in accessing TB care, diagnosis, and treatment, primarily caused by client, provider, and system-related factors. Key challenges included delays in diagnosis due to unavailability of diagnostic tests and the high cost of tests in the private sector. Client-related factors, such as low health-seeking behaviour due to socio-economic status, were identified as major contributors to delays ($\chi^2 = 4.88$, $p<0.001$). The study also highlighted that TB patients often delayed treatment initiation due to stigma and lack of trust in government-provided medicines ($\chi^2 = 7.81$, $p<0.001$). On the positive side, the implementation of the Nikshay Poshan Yojana (NPY), which provides INR 500 per month, significantly improved treatment adherence and reduced delays ($\chi^2 = 16.81$, $p<0.001$). The involvement of private sector providers through Patient Provider Support Agency (PPSA) models was also found to be a facilitator in improving treatment outcomes.[24]

The RATIONS trial, a cluster-randomized controlled trial conducted in 2021 in Jharkhand, India, aimed to assess the effect of macronutrient and micronutrient supplementation on tuberculosis (TB) incidence among household contacts of adults with microbiologically confirmed pulmonary TB. The study enrolled 10,345 household contacts across 28 TB units, where the intervention group received 750 kcal and 23 grams of protein per day, along with micronutrients. The study found that the intervention group had a 39% reduction in the incidence of all forms of TB (adjusted IRR 0.61; 95% CI 0.43–0.85, $p<0.001$), and a 48% reduction in the incidence of microbiologically confirmed pulmonary TB (adjusted IRR 0.52; 95% CI 0.35–0.79, $p<0.001$). The incidence rate in the control group was 1.27 per 100 person-years (95% CI 1.00–1.61), whereas the intervention group had a lower incidence rate of 0.78 per 100 person-years (95% CI 0.64–0.96), leading to a significant relative reduction

in TB incidence (adjusted HR 0.59; 95% CI 0.42–0.83, p<0.001). The nutritional intervention also led to weight gain in the intervention group, with a 0.7 kg weight gain in adults at 6 months ($\chi^2 = 6.55$, p<0.001). The cost per adult household contact for the nutritional intervention was approximately INR 400 per month (US$4.75). This study underscores the significant role of addressing undernutrition in reducing TB incidence and supports the integration of nutritional interventions into TB control programs.[25]

A cross-sectional study conducted in 2016-17 in Khyber Pakhtunkhwa, Pakistan, aimed to assess the care and social support provided to patients with pulmonary tuberculosis (TB). The study included 269 participants and validated the use of the Medical Outcome Study–Social Support Survey (MOS-SSS) among TB patients. The study found that older patients (aged 51–60) were significantly more likely to receive social support compared to younger patients (adjusted OR=6.17, 95% CI 1.55 to 24.59, p≤0.01). Male patients also received more social support than female patients (adjusted OR=2.73, 95% CI 1.49 to 4.98, p≤0.01), and widows received significantly less social support (adjusted OR=0.17, 95% CI 0.04 to 0.80, p≤0.05). Patients with larger household sizes (>15 members) received better social support than those from smaller households (adjusted OR=5.69, 95% CI 1.32 to 24.65, p≤0.05). Social support was also positively associated with higher monthly income (adjusted OR=2.00, 95% CI 1.11 to 3.60, p≤0.05) and home ownership (adjusted OR=1.99, 95% CI 1.10 to 3.60, p≤0.05). The study highlighted the importance of both clinical and social support for TB patients and recommended a coordinated approach to improving TB care, with a particular focus on vulnerable populations such as women and the elderly.[26]

A cohort study conducted during 2019-2021 in Bhavnagar, Gujarat, investigated the association between catastrophic costs and unfavourable treatment outcomes in patients with tuberculosis (TB) co-infected with HIV or diabetes. The study included 234 TB-HIV and 304

TB-diabetes patients. The incidence of catastrophic costs was significantly higher in the TB-HIV group (12%) compared to the TB-diabetes group (5%), with costs exceeding 20% of annual household income. The study found that among TB-HIV patients, significant predictors of unfavourable treatment outcomes included lower weight (OR: 0.93, 95% CI: 0.89–0.98, p=0.002), being from a nuclear family (OR: 2.5, 95% CI: 1.2–5.5, p=0.019), and initial hospitalization (OR: 2.6, 95% CI: 1.1–6.3, p=0.036). In the TB-diabetes group, being from a below poverty line (BPL) family (OR: 2.9, 95% CI: 1.5–5.9, p=0.002) and initial hospitalization (OR: 3.4, 95% CI: 1.1–11.1, p=0.039) were significant predictors of unfavourable treatment outcomes. Catastrophic costs did not show a direct association with unfavourable outcomes in either group. The study highlighted the role of socio-economic factors and initial hospitalization in influencing TB treatment outcomes. The median cash assistance received by patients was INR 3000 (approximately US$44), and patients with catastrophic costs were more likely to have worsened treatment outcomes despite receiving financial aid.[27]

A descriptive exploratory study was conducted in 2023 across four Tuberculosis Units (TUs) in Pune district, Maharashtra, to assess the awareness and utilization of the Nikshay Poshan Yojana (NPY) among tuberculosis (TB) patients. The study involved 227 TB patients, selected using convenient and purposive sampling methods. Among the participants, 88.1% were aware that a monetary benefit was being provided under the scheme to support dietary needs, although only 12% could correctly name the scheme. At the time of data collection, 54.6% (n = 124) of the patients had received the benefit in their bank accounts. Among those who received it, 71% reported utilizing the amount for dietary purposes. Food items most commonly purchased included chapati/roti (84%), eggs (81%), fruits (80%), and milk and milk products (71%). However, Chi-square analysis showed no statistically significant difference

between beneficiaries and non-beneficiaries in increased consumption of major food groups: cereals, millets, and pulses ($\chi^2 = 1.31$, $p = 0.252$), vegetables and fruits ($\chi^2 = 1.32$, $p = 0.250$), milk and animal-source foods ($\chi^2 = 1.28$, $p = 0.257$), and oils, fats, and nuts ($\chi^2 = 0.36$, $p = 0.551$). Additionally, 28% of the recipients used the funds for medical treatment, 20% did not withdraw the money, 15% kept it as savings, and a few reported using it for education, debt repayment, or even addictions.[28]

A descriptive cross-sectional study was conducted between November 2021 and July 2022 in a DOTS centre attached to a tertiary care hospital in New Delhi to assess the utilization of the Nikshay Poshan Yojana (NPY) among TB patients. The study enrolled 42 patients with drug-sensitive tuberculosis (DS-TB) in the continuation phase. As per the Nikshay portal, 95.3% of the patients were enrolled under NPY, and 95% had received the first instalment; however, only 47.5% self-reported receiving the benefit, and 30% were unaware of having received it. The median time to receipt of the first instalment was 4.1 months (IQR: 2–5.8 months). 94.3% of patients were aware of the NPY scheme, only 57.5% were aware of its purpose. Among the 19 patients who acknowledged receipt, 57.8% had used the money, and 90.9% of those used it to purchase food. Barriers to utilization included unawareness about the scheme's purpose (42.5%), unawareness of receipt (30%), lack of perceived need for support (35.7%), and bank account issues (7.1%). Notably, the median monthly out-of-pocket expenditure on additional dietary items was ₹2500 (IQR: ₹2000–₹3000), which is five times the ₹500 monthly benefit provided. These findings emphasize the need for better awareness, simplified processes, and an increase in financial assistance to ensure that NPY meets its intended nutritional support objectives.[29]

A mixed-methods study conducted in Pune district, Maharashtra, evaluated the implementation of the Direct Benefit Transfer (DBT) system under the National Tuberculosis Elimination Programme (NTEP), with a focus on coverage, timeliness, and operational challenges. The study included 133 tuberculosis (TB) patients and employed both quantitative surveys and qualitative interviews with patients and programme functionaries. Results showed that 82% of patients were enrolled in the DBT scheme, but only 59% had received at least one instalment at the time of the interview. The median delay in receiving the first instalment was 81 days (IQR: 60–101). Chi-square analysis revealed a significant association between delay in payment and public versus private sector notification ($\chi^2 = 7.9$, $p=0.005$), with patients notified in the private sector experiencing greater delays. Additionally, qualitative findings highlighted several systemic barriers such as lack of awareness about the scheme, confusion over banking procedures, and delays in approval and fund disbursement through the Public Financial Management System (PFMS). Many patients expressed uncertainty about whether the funds had been received, reflecting poor communication between health workers and beneficiaries.[30]

MATERIALS AND METHODS

A facility-based descriptive study was conducted among Tuberculosis patients registered under the National Tuberculosis Elimination Program (NTEP) at the District Tuberculosis Centre (DTC) in an urban area of Belagavi, Karnataka to assess the awareness and utilisation of Patient Support Systems and to identify the factors associated with their treatment outcomes. The study was conducted during 1st April 2023 & 31st March 2024 (12 months).

Sample size was calculated based on the assumption that 50% of the study population was aware of the Patient Support Systems (PSS), as no prior local estimate was available. This proportion was chosen as it provides the maximum sample size for a given level of precision. The sample size was calculated using the formula:

$$n = Z^2 \times p(1-p) / d^2$$

Where:

- n = required sample size
- Z = standard normal deviate at 95% confidence level = 1.96
- p = estimated proportion (awareness of PSS) = 0.5
- d = absolute precision = 0.05

$$n = (1.96)^2 \times 0.5 \times 0.5 / (0.05)^2 = 3.8416 \times 0.25 / 0.0025 = 384.$$

After accounting for a 5% non-response rate, the final sample size was increased to approximately 403. For ease of distribution and implementation, the total sample size was fixed at 400 participants.

The sampling frame consisted of a list of tuberculosis patients registered under the National Tuberculosis Elimination Programme (NTEP) at the urban TB unit of Belagavi city between 1st January 2021 and 31st December 2023. Systematic random sampling was employed to select participants. After selecting the first participant through the lottery method, every 3rd patient on the list was included. If a selected participant refused to participate, the next 3rd eligible patient was chosen. This process was continued until the required sample size was achieved.

After recruitment, selected participants were interviewed by the investigator using a pre-validated and pre-tested questionnaire. The socio-demographic details were collected from the TB treatment registers. Other relevant information was obtained by in-person interview with prior intimation to the patients regarding the interview over a period of 15–20 days. Written informed consent was obtained first after explaining the purpose of the study and ensuring data confidentiality. The actual interview went on for 15-20 minutes in the local language (Kannada/Marathi/Hindi) starting with an introduction, followed by questions on awareness and utilisation of the Patient Support Systems, TB Treatment outcomes and Attitudes and Practices regarding Tuberculosis Treatment and Medication adherence.

Inclusion Criteria:

- All TB patients registered for treatment under NTEP, urban TB unit, Belagavi from 1st January 2021 till 31st December 2023 (selected by systematic random sampling)
- Age 18 years or older
- Ability to provide written informed consent

Exclusion Criteria:

- Severe cognitive impairment or mental illness that would impede the ability to participate in the study.
- Hospitalised patients with serious illness at the time of visit.

Permission from the Principal of the medical college and the District Tuberculosis Office, Belagavi was obtained. Ethical clearance was obtained from the Institutional Ethics Committee for Human Subjects Research of the Medical College dated 01/04/2023 vide under letter MDC/JNMCIEC/48 (ANNEXURE – I). Written informed consent was obtained from all participants before data collection (ANNEXURE – II). A pilot study was conducted among 40 Tuberculosis patients from a TB unit other than the selected TB unit to assess the feasibility of the study and the questionnaire was revised accordingly.

Selected TB patients were interviewed by using a pre-validated and pre-tested questionnaire from socio-demographic characteristics such as education level, marital status, occupation and religion from 'Gallup World Poll' questionnaire.

The questionnaire consisted of following sections:

I. Sociodemographic characteristics of study participants

II. Awareness of PSS

III. Utilisation of PSS

IV. Tuberculosis Treatment outcomes

V. Attitude towards tuberculosis, towards treatment and towards services under NTEP

VI. Practice of Medication adherence, monitoring and testing; and daily activities

Awareness of the Nikshay Poshan Yojana (NPY) was assessed using 12 structured questions that covered participants' knowledge regarding eligibility, required documents, benefit amounts, and application procedures. Each correct or affirmative response was assigned a score of 1, while incorrect or negative responses were given a score of 0. The total awareness score ranged from 0 to 12. Similarly, utilisation of NPY was evaluated through 12 questions focusing on enrolment, receipt of financial and nutritional support, and benefit disbursements. Each response indicating utilisation was scored as 1, and responses indicating non-utilisation or 'Not Applicable' were scored as 0. The total utilisation score also ranged from 0 to 12. Based on their scores, participants were categorized into three levels for both awareness and utilisation: poor (0–4), average (5–8), and good (9–12). Mean, median, and standard deviation were calculated for both awareness and utilisation scores. Associations between awareness/utilisation levels and socio-demographic variables were analysed using the Chi-square test, and t test was performed to identify significant predictors of good awareness and good utilisation.

Collected data was entered in Microsoft Excel sheet and analysed by IBM SPSS version 20 using frequency, percentages, mean and standard deviation. Association between outcome variables like awareness and sociodemographic factors were analysed by using Chi-square test.

Definitions of variables

1. Age: Calendar age in years was considered for the study (nearest completed years as on last birthday)

2. Gender: Either male or female as mentioned by the study participant.

3. Permanent Address: Residential address where patient was residing since one year was taken into consideration.

4. Employment status:

Employed: "An occupation by which a person earns a living".[31]

Unemployed: "Not engaged in a gainful occupation".[32]

5. Education status:

Illiterate: "A person who could not read and write any language".[33]

Primary school: "A person who has studied from first to seventh standard".[33]

High school: "A person had studied 8th standard to 12th standard".[33]

PUC or diploma: "Person who has studied up to PUC 2nd year or a Diploma Course".[33]

Graduation: "A person who had a bachelor's degree in any field".[33]

6. Marital status: Marital status was classified as: married, unmarried, widow, widower, divorcee.

7. Religion: "An organized system of beliefs, ceremonies, and rules used to worship a God or groups or Gods. For example, Hindu, Muslims and Christian as quoted by the study participant".[34]

8. Family:

Nuclear family: “Married couple along with their dependent children who live in the same house”.[35]

Joint family: “More than one married couple along with their dependent children who live in the same household. Male members are blood relatives and female members of the family are related by either marriage or blood”.[35]

Broken Family: “A family where the parents have separated, or where death has occurred of one or both the parents”.[35]

Problem Family: “A family where the standards of life are far below the accepted minimum and parents are unable to meet the physical and emotional needs of their children”.[35]

9. Socio economic status[36]:

Modified B. G. Prasad's classification was used

Social Class		Original BG Prasad classification of 1961 (Rs. / month)	Modified BG Prasad classification for 2023 (Rs. / month)
I	Upper class	100 and above	8967 and above
II	Upper middle class	50-99	4484 -8966
		30-49	2690 –4483
III	Middle class	15-29	1345 –2689
IV	Lower middle class	Below 15	Below 1345
V	Lower class		

The BG Prasad Scale, established in 1961 with the Consumer Price Index (CPI) of 1960 as the reference point (indexed at 100), has undergone periodic updates. Over the years, adjustments and refinements have been necessary. To recalibrate the CPI to the 1960 baseline of 100, linkage factors were introduced in the years 1982, 2001, and 2016, with values of 4.63, 4.93, and 2.88, respectively.[36]

Average Consumer Price Index for the year 2023 (1st January to 31st December) - 136.4

Correction factor = current index value (136.4) x linkage factor between 1960 and 1982 (4.63) x linkage factor between 1982 and 2001 (4.93) x linkage factor between 2001 and 2016 (2.88) whole divided by base index in 2016 (100) = 89.67.[37]

The new income values were calculated by using the formula, new income values = Correction factor x old income value of 1961.[37]

10. Ration Card: "An official document issued by the government to eligible households under the Public Distribution System (PDS), enabling access to subsidized food grains and essential commodities, and also serving as a form of identification and proof of residence".[38]

11. Aadhaar Card: "A unique 12-digit biometric-based identification document issued by the Unique Identification Authority of India (UIDAI), serving as a proof of identity and address, and facilitating access to various government services, financial transactions, and social welfare schemes".[39]

12. Types of Tuberculosis:

Pulmonary: "A form of tuberculosis caused by *Mycobacterium tuberculosis*, primarily affecting the lungs, characterized by persistent cough (>2 weeks), haemoptysis, fever, night sweats, and weight loss, diagnosed through sputum examination and radiographic findings".[1]

Extrapulmonary: "A tuberculosis infection occurring outside the lungs, affecting organs such as the lymph nodes, pleura, bones, meninges, genitourinary tract, or abdomen, diagnosed using histopathological, microbiological, or imaging studies".[1]

Multidrug-resistant TB: "A form of tuberculosis which is resistant to at least isoniazid and rifampicin".[1]

XDR-TB: “A form of Tuberculosis, which is resistant to isoniazid, rifampicin, any fluoroquinolone, and at least one second-line injectable drug (amikacin, kanamycin, or capreomycin)”.[1]

13. Diabetes: “A person who has been previously diagnosed with diabetes mellitus by a healthcare professional, based on medical records or patient self-report.”[40]

14. HIV status: “An individual’s serological status indicating the presence or absence of Human Immunodeficiency Virus (HIV) infection, categorized as HIV-positive (infected), HIV-negative (not infected), or unknown (not tested or status not disclosed)”.[41]

15. Nikshay: “An online web-based portal developed by the Government of India for real-time tracking, surveillance, and management of tuberculosis cases, facilitating notifications, treatment monitoring, and Direct Benefit Transfers (DBT) under the National Tuberculosis Elimination Programme (NTEP)”.[42]

16. Nikshay Poshan Yojana (NPY): “A scheme under the National Tuberculosis Elimination Programme (NTEP) in India, which provides a nutritional support incentive of ₹500 per month to tuberculosis (TB) patients undergoing treatment to improve treatment adherence and recovery”.[43]

17. Direct Benefit Transfer (DBT): “A scheme under the National Tuberculosis Elimination Programme (NTEP) in India, which provides a nutritional support incentive of ₹500 per month to tuberculosis (TB) patients undergoing treatment to improve treatment adherence and recovery”.[44]

Definitions for outcomes of TB treatment[45]:

Cured: "Microbiologically confirmed TB patients at the beginning of treatment who were smear or culture negative at the end of the complete treatment".[45]

Treatment Completed: "A TB patient who completed treatment without evidence of failure or clinical deterioration but with no record to show that the smear or culture results of biological specimens in the last month of treatment was negative, either because the test was not done or because the result is unavailable". [45]

Failure: "A TB patient whose biological specimen is positive by smear or culture at the end of treatment". [45]

Lost to follow up: "A patient whose treatment was interrupted for one consecutive month or more". [45]

Not evaluated: "A TB patient for whom no treatment outcome is assigned. This includes the former Transfer out". [45]

Treatment regimen changed: "A TB patient who is on first line regimen and has been diagnosed as having DRTB and switched to drug resistant TB regimen prior to being declared as failed". [45]

Died: "A patient who has died during the course of anti TB treatment". [45]

RESULTS

SECTION – I: SOCIO-DEMOGRAPHIC VARIABLES

Table 1: Distribution of the participants according to their age group (n=400)

Age group (in years)	Frequency	Percentage
18-40	227	56.8
40-60	149	37.2
60+	24	6.0
TOTAL	**400**	**100**

Out of 400 study participants, 227 (56.8%) participants were in the 18-40 years age group, 149 (37.2%) participants were in the 40-60 years age group, and 24 (6.0%) participants were in the 60+ years age group.

Graph 1: Distribution of the participants according to their age group (n=400)

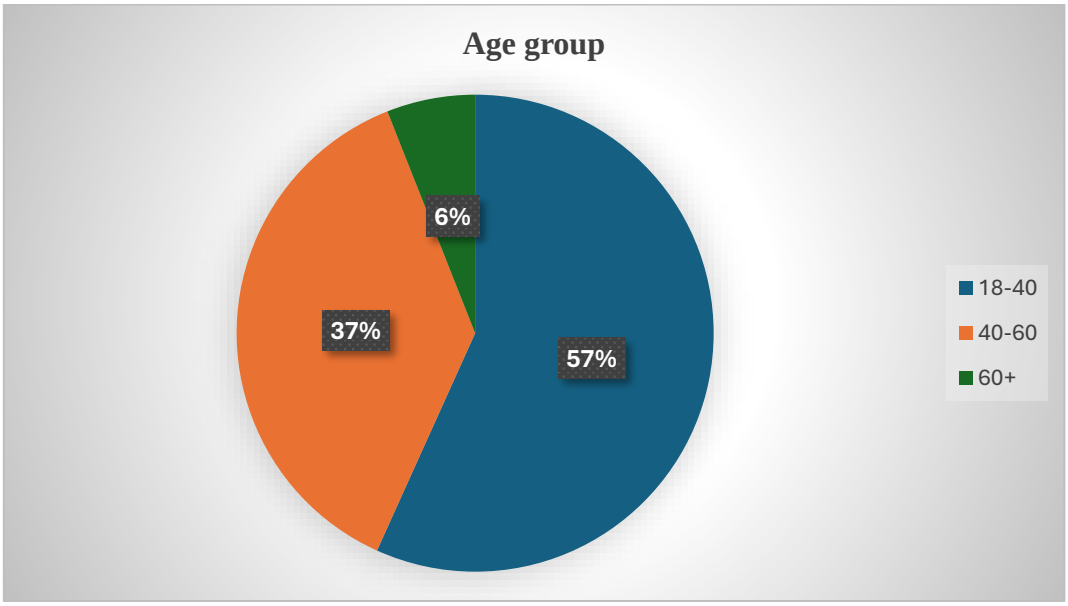


Table 2: Distribution of the participants according to their gender (n=400)

Gender	Frequency	Percentage
Male	274	68.5
Female	126	31.5
TOTAL	**400**	**100**

Out of 400 study participants, 274 (68.5%) participants were males, while 126 (31.5%) participants were females.

Graph 2: Distribution of the participants according to their gender (n=400)

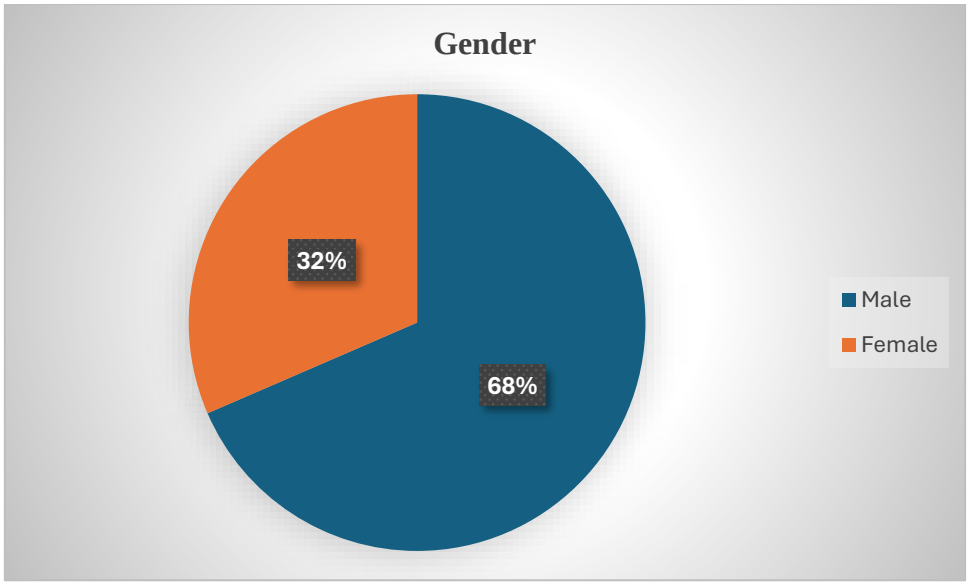


Table 3: Distribution of the participants according to their Employment status (n=400)

Employment status	Frequency	Percentage
Employed	157	39.2
Unemployed	243	60.8
TOTAL	**400**	**100**

Among the 400 study participants, 157 (39.2%) participants were employed, whereas 243 (60.8%) participants were unemployed.

Graph 3: Distribution of the participants according to their Employment status (n=400)

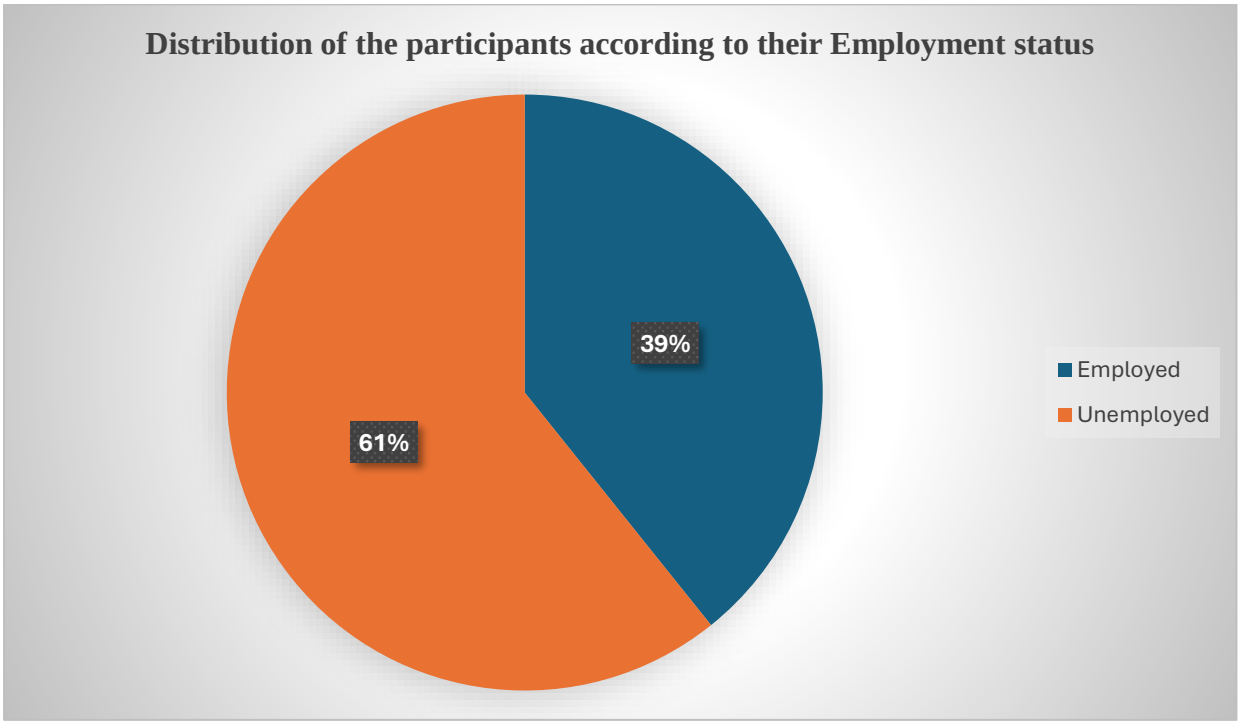


Table 4: Distribution of the participants according to their educational level (n=400)

Educational level	Frequency	Percentage
Illiterate	5	1.2
Primary	45	11.2
High school	144	36.0
PUC	83	20.8
ITI/Diploma	100	25.0
Graduation	23	5.8
TOTAL	**400**	**100**

Among the 400 study participants, 5 (1.2%) participants were illiterates, 45 (11.2%) participants had completed primary education, 144 (36.0%) participants had high school education, 83 (20.8%) participants had completed PUC, 100 (25.0%) participants had an ITI/Diploma qualification, and 23 (5.8%) participants had attained graduation-level education.

Graph 4: Distribution of the participants according to their education level (n=400)

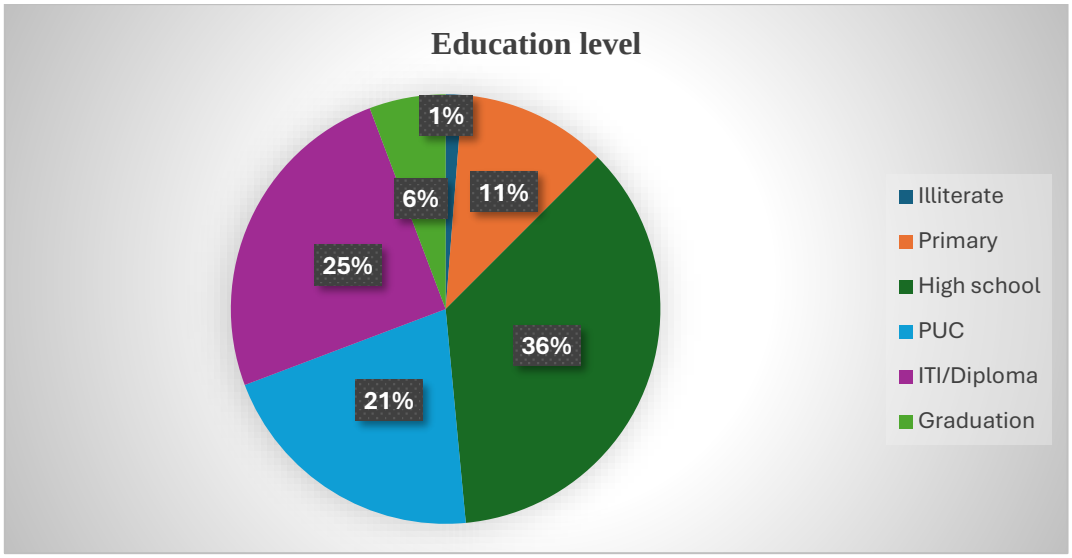


Table 5: Distribution of the participants according to their marital status (n=400)

Marital status	Frequency	Percentage
Married	297	74.2
Unmarried	75	18.8
Widowed/Divorced/Separated	28	7.0
TOTAL	**400**	**100**

Out of 400 study participants, 297 (74.2%) participants were married, 75 (18.8%) participants were unmarried, 28 (7.0%) participants were widowed/divorced/separated.

Graph 5: Distribution of the participants according to their marital Status (n=400)

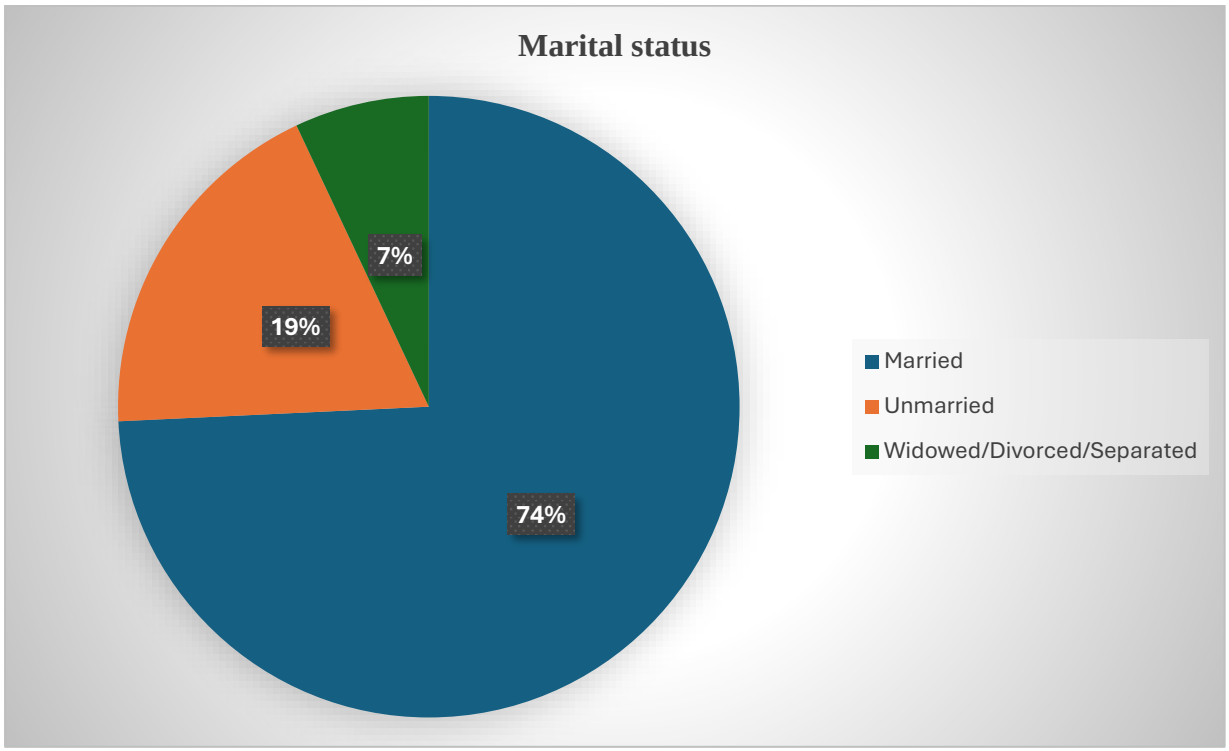


Table 6: Distribution of the female participants according to their pregnancy status (n=126)

Among the 126 female study participants, 1 (0.8%) participant was pregnant, 125 (99.2%) participants were not pregnant.

Graph 6: Distribution of the female participants according to their pregnancy status (n=126)

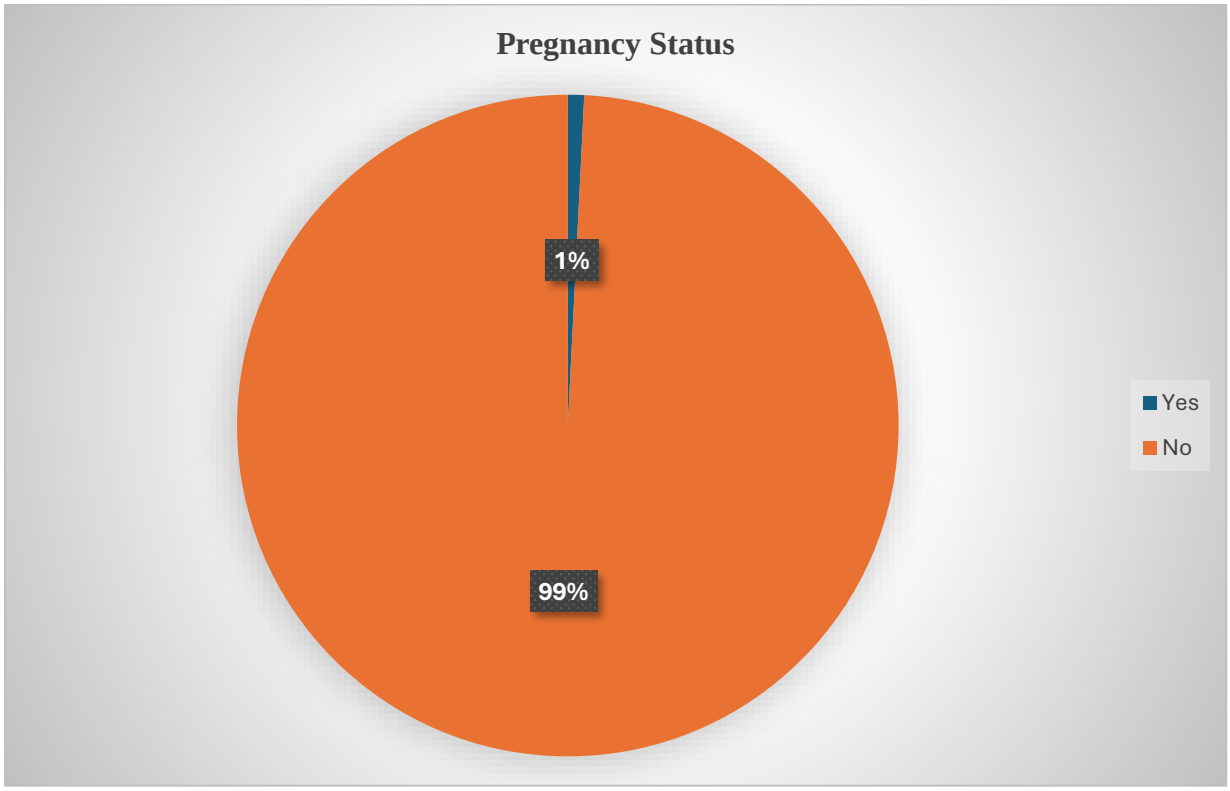


Table 7: Distribution of the participants according to their religion (n=400)

Religion	Frequency	Percentage
Hindu	344	86.0
Muslim	52	13.0
Christian	4	1.0
TOTAL	**400**	**100**

Among the 400 study participants, 344 (86.0%) participants were Hindus, 52 (13.0%) participants were Muslims, and 4 (1.0%) participants were Christians, respectively.

Graph 7: Distribution of the participants according to their religion (n=400)

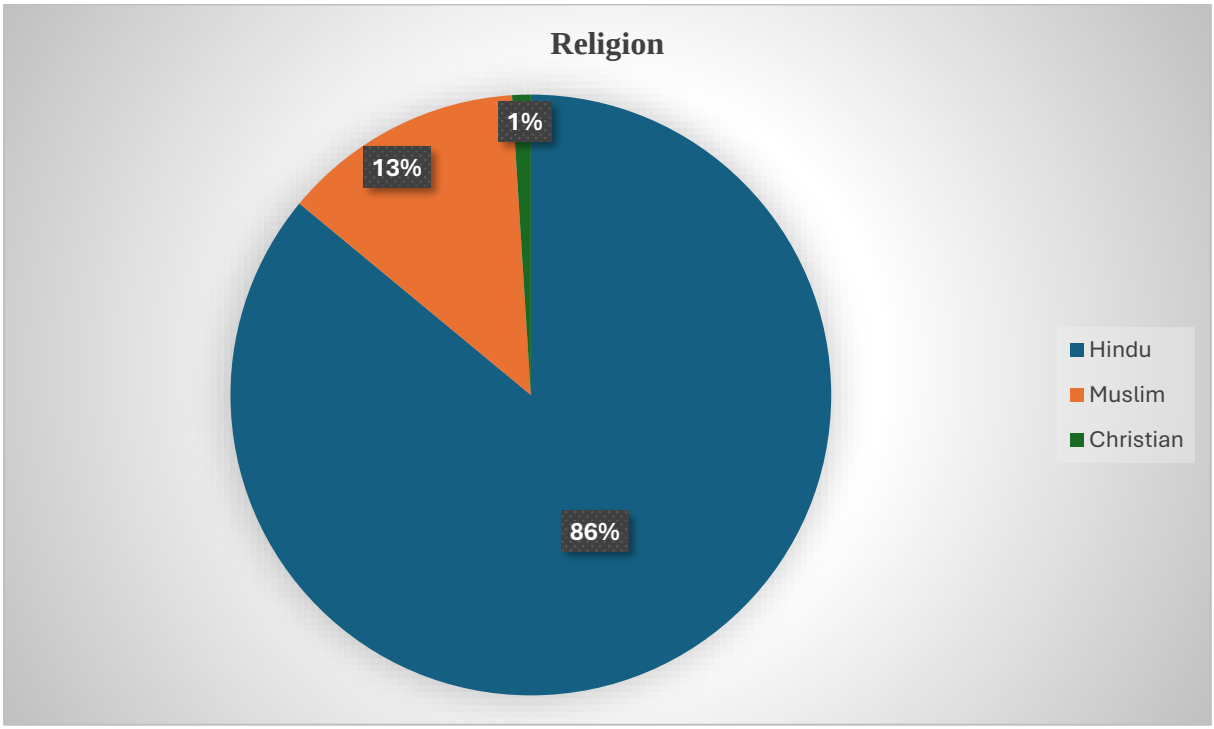


Table 8: Distribution of the participants according to their category (n=400)

Category	Frequency	Percentage
General	240	60.0
ST	60	15.0
SC	55	13.8
OBC	45	11.2
TOTAL	**400**	**100**

Out of 400 study participants, 240 (60.0%) participants belonged to the General category, 60 (15.0%) participants belonged to the Scheduled Tribes (ST), 55 (13.8%) participants were from the Scheduled Castes (SC), and 45 (11.2%) participants belonged to the Other Backward Classes (OBC).

Graph 8: Distribution of the participants according to their category (n=400)

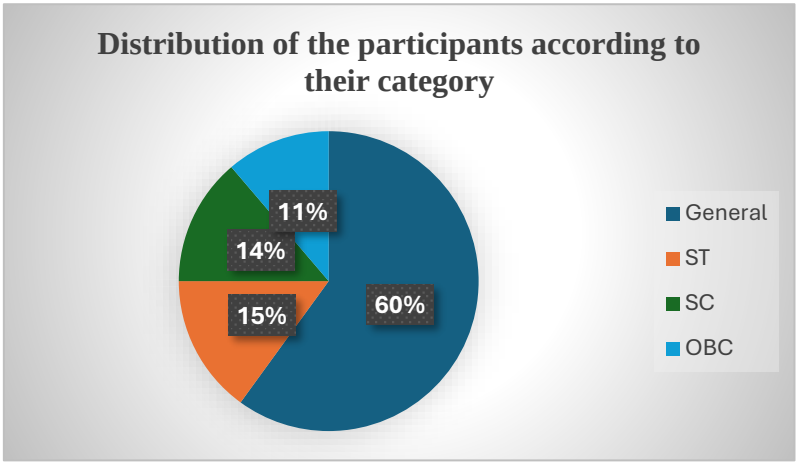


Table 9: Distribution of the participants according to their family type (n=400)

Family type	Frequency	Percentage
Nuclear	187	46.8
Joint	197	49.2
Broken	13	3.2
Problem	3	0.8
TOTAL	**400**	**100**

Among the 400 study participants, 187 (46.8%) participants lived in nuclear families, 197 (49.2%) participants lived in joint families, 13 (3.2%) participants belonged to broken families, and 3 (0.8%) participants reported having problem families.

Graph 9: Distribution of the participants according to their family type (n=400)

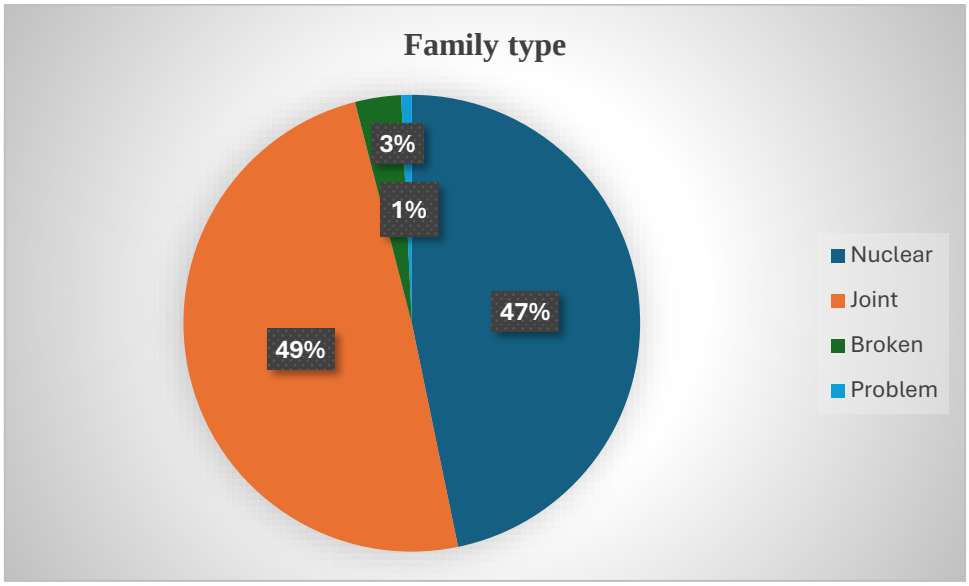


Table 10: Distribution of the participants according to their socio-economic status according to modified B.G. Prasad's classification (n=400)

Socio economic status	Frequency	Percentage
Class I	15	3.8
Class II	50	12.5
Class III	130	32.5
Class IV	140	35.0
Class V	65	16.2
TOTAL	**400**	**100**

Out of 400 study participants, 15 (3.8%) participants belonged to Class I, 50 (12.5%) participants to Class II, 130 (32.5%) participants to Class III, 140 (35.0%) participants to Class IV, and 65 (16.2%) participants to Class V according to their socio-economic status.

Graph 10: Distribution of the participants according to their socio-economic status (n=400) (according to modified B.G. Prasad's classification)

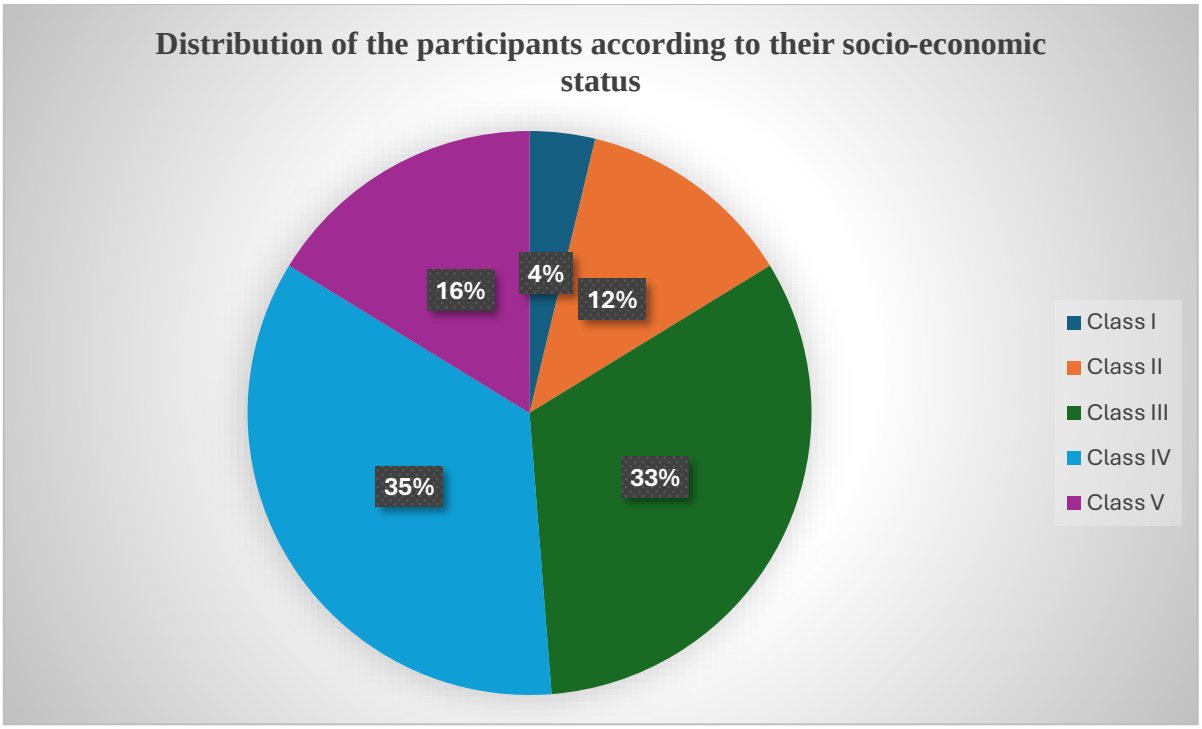


Table 11: Distribution of the participants according to their card status (n=400)

TYPE OF CARD	Yes	No
Aadhar Card	396	4
Ration Card	338	62

Among the 400 study participants, 396 (99.0%) participants possessed an Aadhar Card, while only 4 (1.0%) participants did not have an Aadhar card. Similarly, 338 (84.5%) participants held a Ration Card (BPL), whereas 62 (15.5%) participants did not possess a ration card.

Graph 11: Distribution of the participants according to their card possession status (n=400)

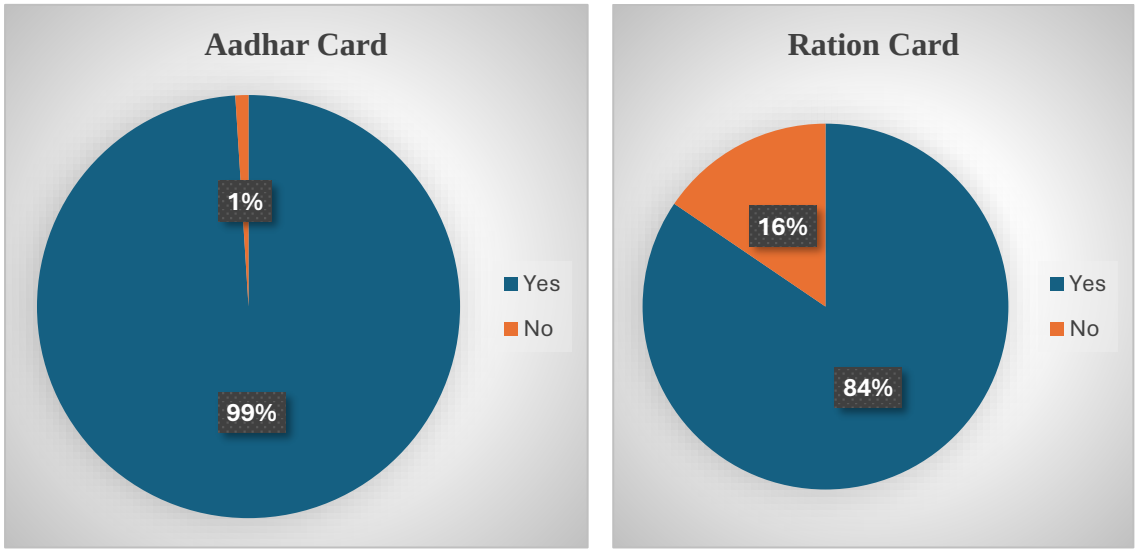


Table 12: Distribution of the participants according to their bank account status (n=400)

Bank account	Frequency	Percentage
Yes	376	94.0
No	24	6.0
TOTAL	**400**	**100**

Among the 400 study participants, 376 (94.0%) participants had a bank account, while 24 (6.0%) participants did not have a bank account.

Graph 12: Distribution of the participants according to their bank account status (n=400)

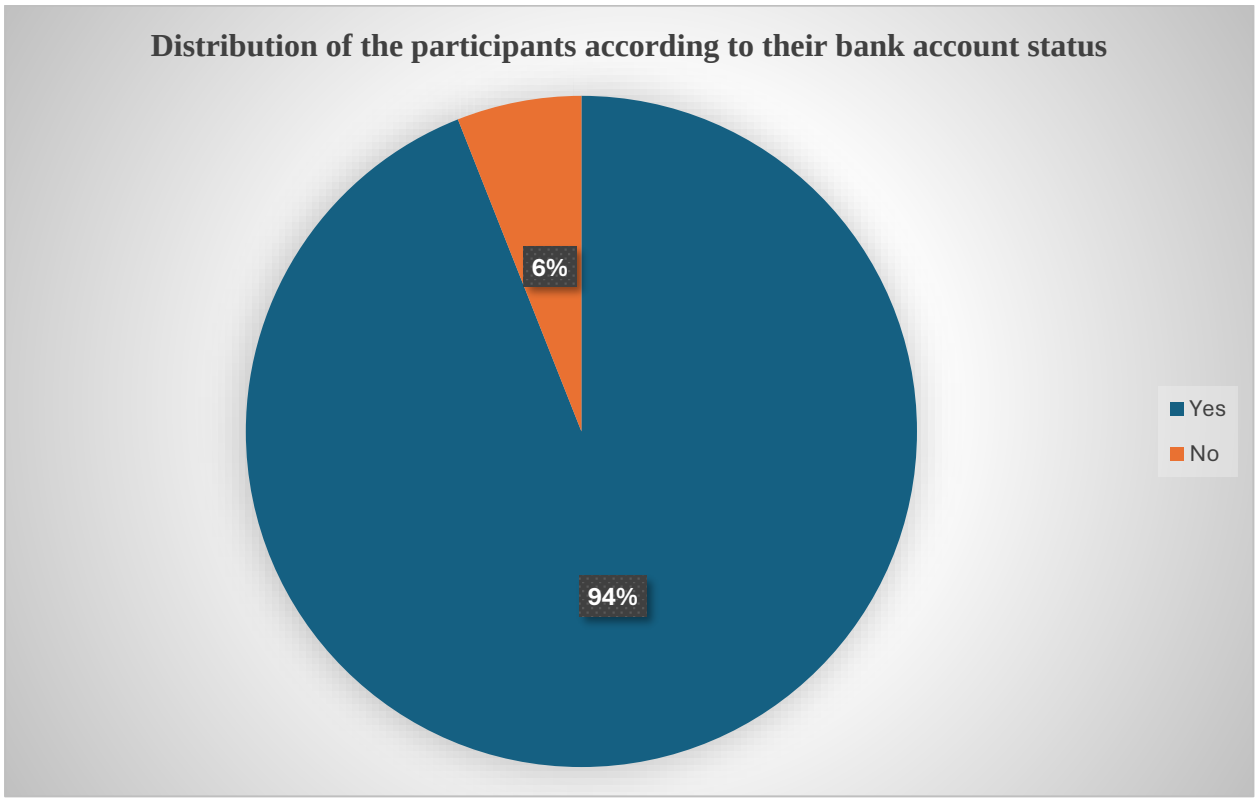


Table 13: Distribution of the participants according to their type of TB (n=400)

Type of TB	Frequency	Percentage
Pulmonary	237	59.3
Extrapulmonary	162	40.5
MDR	1	0.2
TOTAL	**400**	**100**

Out of 400 participants, 237 (59.3%) participants were diagnosed with pulmonary TB, 162 (40.5%) had extrapulmonary TB, 1 (0.2%) was identified as having multidrug-resistant TB (MDR-TB), while none of the participants were diagnosed with extensively drug-resistant TB (XDR-TB).

Graph 13: Distribution of the participants according to their type of TB (n=400)

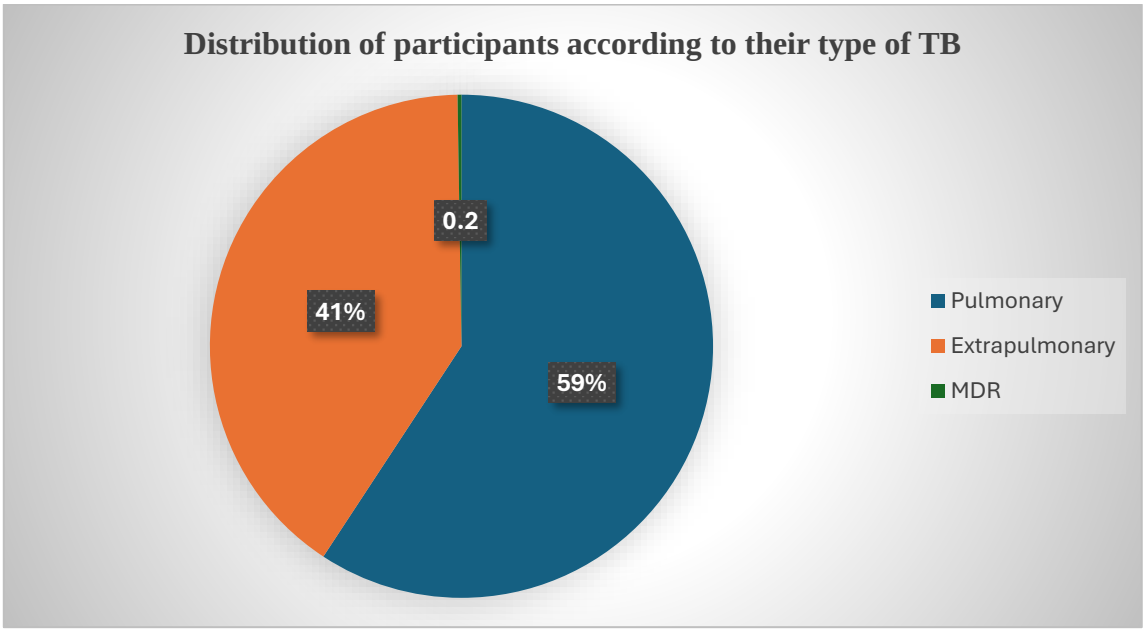


Table 14: Distribution of the participants according to their Diabetes status (n=400)

Diabetes	Frequency	Percentage
Diabetic	32	8.0
Non-Diabetic	368	92.0
TOTAL	**400**	**100**

Among the 400 study participants, 32 (8%) participants had diabetes, while 368 (92%) participants were non-diabetic.

Graph 14: Distribution of the participants according to their Diabetes status (n=400)

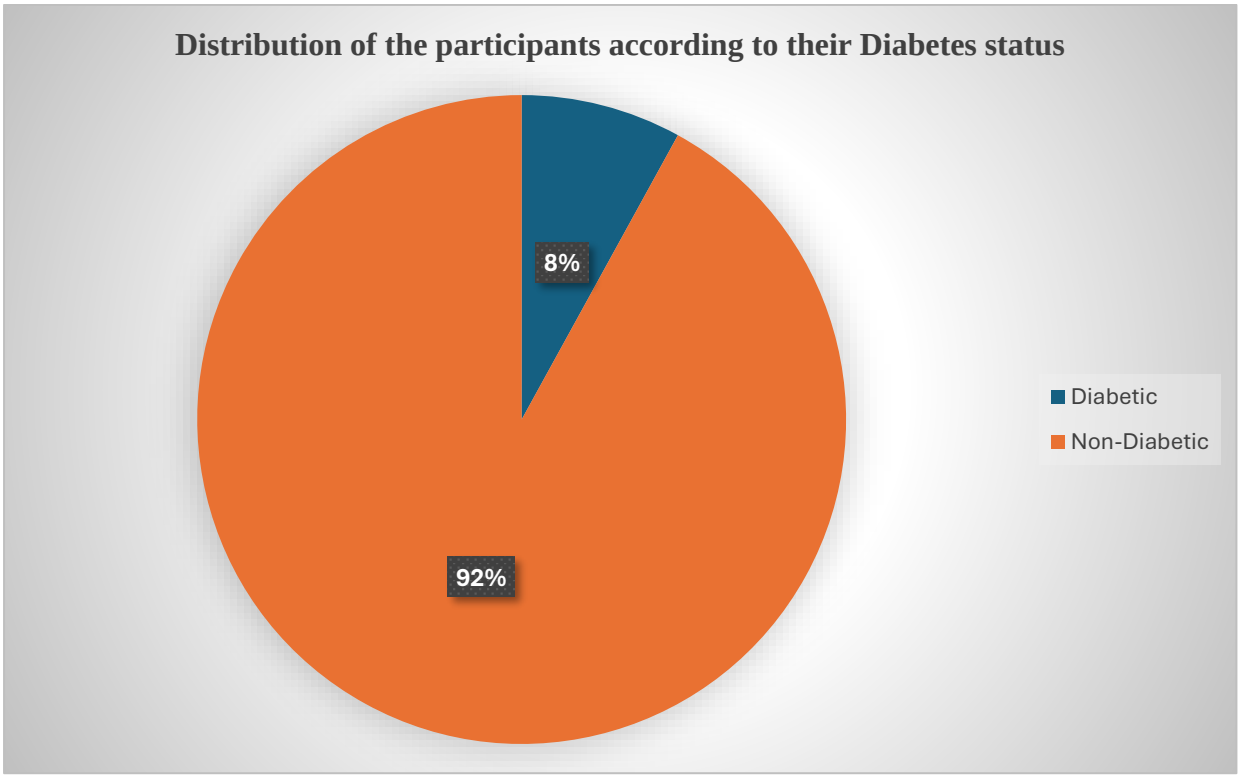


Table 15: Distribution of the participants according to their HIV status (n=400)

HIV status	Frequency	Percentage
HIV Positive	23	5.8
HIV Negative	377	94.2
TOTAL	**400**	**100**

Out of 400 study participants, 23 (5.8%) participants were HIV positive, while 377 (94.2%) participants were HIV negative.

Graph 15: Distribution of the participants according to their HIV status (n=400)

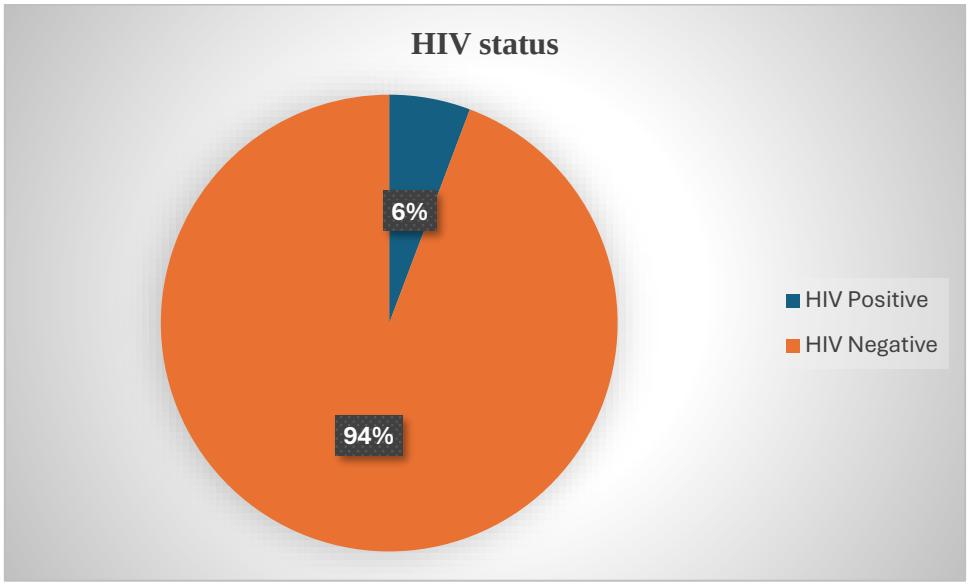
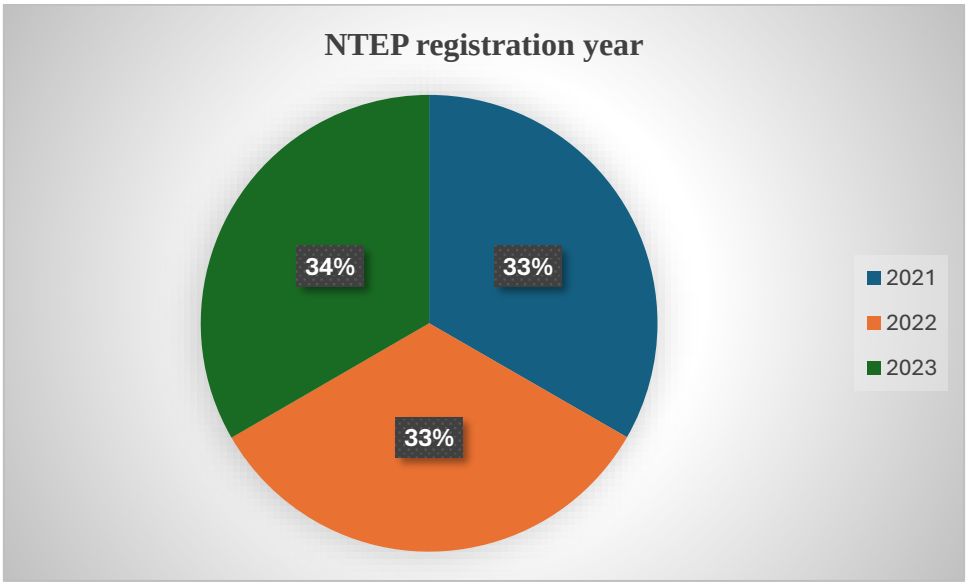


Table 16: Distribution of participants based on their registration year (n-=400)

NTEP registration year	Frequency	Percentage
2021	133	33.3
2022	133	33.3
2023	134	33.4
TOTAL	**400**	**100**

Out of 400 study participants, 133 (33.3%) participants had registered under NTEP in 2021, 133 (33.3%) in 2022, and 134 (33.4%) in 2023.

Graph 16: Distribution of participants based on their registration year (n-=400)



SECTION – II: AWARENESS OF NIKSHAY POSHAN YOJANA (NPY)

Table 17: Assessment of awareness level of Patient Support Systems among TB patients (n=400)

Awareness	Frequency	Percentage
Poor	349	87.2
Average	41	10.3
Good	10	2.5
TOTAL	**400**	**100**

Out of 400 study participants, 349 (87.3) participants had poor awareness of TB patient support systems, 41 (10.3%) participants had average awareness, and only 10 (2.5%) participants had good awareness.

Graph 17: Assessment of awareness level of Patient Support Systems among TB patients (n=400)

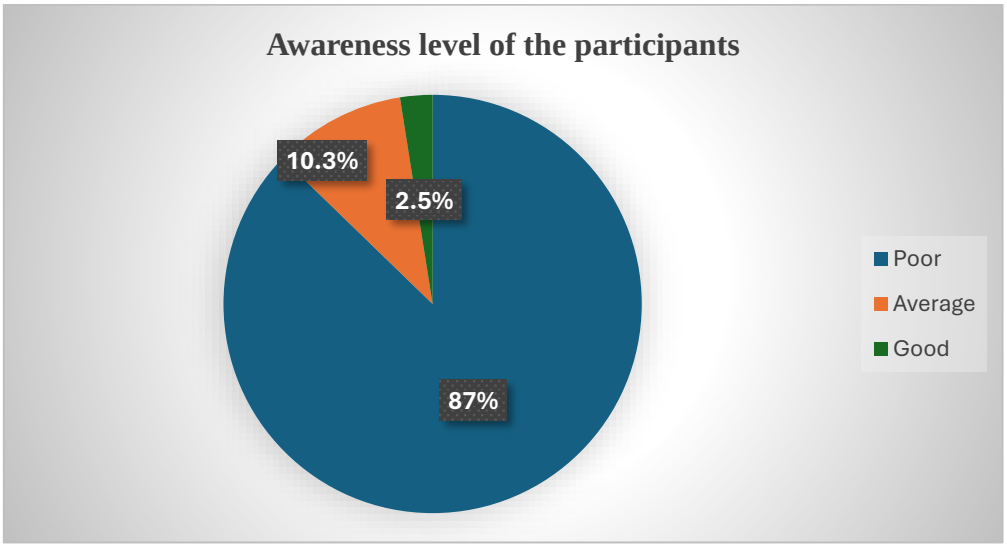


Table 18: Association of socio demographic variables and Awareness of 'Patient support systems'

		Awareness						Chi-square (Sig.)
		Poor Awareness		Average Awareness		Good Awareness		
		n	%	n	%	n	%	
Age (in yrs)	18-40	209	92.1	16	7.0	2	0.9	16.858 (0.001) *
	40-60	124	83.2	19	12.8	6	4.0	
	60+	16	66.7	6	25.0	2	8.3	
Gender	Male	230	83.9	36	13.2	8	2.9	8.785 (0.012) *
	Female	119	94.4	5	4.0	2	1.6	
Employment status	Employed	133	84.7	18	11.5	6	3.8	2.368 (0.306)
	Unemployed	216	88.9	23	9.5	4	1.6	
Education status	Illiterate	5	100.0	0	0	0	0	3.899 (0.956)
	Primary	39	86.7	5	11.1	1	2.2	
	High school	128	88.9	12	8.3	4	2.8	
	PUC	68	81.9	12	14.5	3	3.6	
	ITI/Diploma	88	88.0	10	10.0	2	2.0	
	Graduation	21	91.3	2	8.7	0	0	

Marital status	Married	261	87.9	28	9.4	8	2.7	13.946 (0.062)
	Unmarried	68	90.7	7	9.3	0	0	
	Widow	3	60.0	2	40.0	0	0	
	Widower	14	70.0	4	20.0	2	10.0	
	Divorce	3	100.0	0	0	0	0	
Pregnant	Yes	0	0	1	100.0	0	0	13.977 (0.008)
	No	120	93.8	6	4.7	2	1.6	
	Not applicable	229	84.5	34	12.5	8	3.0	
Religion	Hindu	298	86.6	37	10.8	9	2.6	1.139 (0.920)
	Muslim	47	90.4	4	7.7	1	1.9	
	Christian	4	100.0	0	0	0	0	
Category	General	246	87.9	27	9.6	7	2.5	3.049 (0.778)
	ST	46	82.1	8	14.3	2	3.6	
	SC	28	87.5	4	12.5	0	0.0	
	OBC	29	90.6	2	6.3	1	3.1	
Family type	Nuclear	160	85.6	23	12.3	4	2.1	20.265 (0.002)
	Joint	180	91.4	13	6.6	4	2.0	
	Broken	8	61.5	3	23.1	2	15.4	

	Problem	1	33.3	2	66.7	0	0	
Socio economic status	Class I	27	96.4	1	3.6	0	0	3.230 (0.915)
	Class II	60	85.7	8	11.4	2	2.9	
	Class III	139	86.9	17	10.6	4	2.5	
	Class IV	101	87.1	11	9.5	4	3.4	
	Class V	22	84.6	4	15.4	0	0	
Ration card	APL	58	93.5	4	6.5	0	0	2.452 (0.274)
	BPL	291	86.1	37	10.9	10	3.0	
Aadhar card	Yes	345	87.1	41	10.4	10	2.5	0.770 (1.000)
	No	4	100.0	0	0	0	0	
Bank account	Yes	326	86.7	40	10.6	10	2.7	0.743 (0.729)
	No	23	95.8	1	4.2	0	0	
Type of TB	Pulmonary	199	84.0	31	13.1	7	3.0	8.355 (0.129)
	Extrapulmonary	149	92.0	10	6.2	3	1.9	
	MDR	1	100.0	0	0	0	0	
Diabetes status	Diabetic	26	81.3	5	15.6	1	3.1	1.763 (0.420)
	Non-Diabetic	323	87.8	36	9.8	9	2.4	
HIV Status	Positive	19	82.6	3	13.0	1	4.3	

	Negative	330	87.5	38	10.1	9	2.4	1.411 (0.510)

(*<0.05 significance & chi square value is obtained by Fisher exact test)

A significant association was found between age and awareness ($\chi^2 = 16.858$, $p = 0.001$), with older individuals (60+ years) exhibiting a higher proportion of good awareness (8.3%) compared to younger groups. Gender also showed a statistically significant association ($\chi^2 = 8.785$, $p = 0.012$), where females (94.4%) had poorer awareness compared to males (83.9%). Family type also influenced awareness levels significantly ($\chi^2 = 20.265$, $p = 0.002$), with individuals from broken families (15.4%) having a relatively higher proportion of good awareness than those from nuclear (2.1%) and joint families (2.0%).

On the other hand, employment status ($\chi^2 = 2.368$, $p = 0.306$), education status ($\chi^2 = 3.899$, $p = 0.956$), marital status ($\chi^2 = 13.946$, $p = 0.062$), religion ($\chi^2 = 1.139$, $p = 0.920$), category ($\chi^2 = 3.049$, $p = 0.778$), socioeconomic status ($\chi^2 = 3.230$, $p = 0.915$), and ration card possession ($\chi^2 = 2.452$, $p = 0.274$) did not show significant associations with awareness. Additionally, neither Aadhar card possession ($\chi^2 = 0.770$, $p = 1.000$) nor bank account ownership ($\chi^2 = 0.743$, $p = 0.729$) had any significant influence on their awareness levels. The type of tuberculosis ($\chi^2 = 8.355$, $p = 0.129$) also did not show a significant association, though pulmonary TB patients had a slightly higher proportion of good awareness (3.0%) compared to extrapulmonary TB patients (1.9%). Similarly, comorbidities such as diabetes ($\chi^2 = 1.763$, $p = 0.420$) and HIV status ($\chi^2 = 1.411$, $p = 0.510$) were not significantly associated with awareness about TB Patient Support Systems.

Overall, age (χ^2 = 16.858, p = 0.001), gender (χ^2 = 8.785, p = 0.012), and family type (χ^2 = 20.265, p = 0.002) were the only socio-demographic variables that showed a statistically significant association with awareness of TB patient support systems. Older individuals (especially those aged 60+ years) and individuals from broken families showed relatively higher levels of good awareness. In contrast, other factors such as employment status (χ^2 = 2.368, p = 0.306), educational status (χ^2 = 3.899, p = 0.956), marital status (χ^2 = 13.946, p = 0.062), religion (χ^2 = 1.139, p = 0.920), social category (χ^2 = 3.049, p = 0.778), socioeconomic status (χ^2 = 3.230, p = 0.915), possession of a ration card (χ^2 = 2.452, p = 0.274), Aadhaar card (χ^2 = 0.770, p = 1.000), or bank account (χ^2 = 0.743, p = 0.729) were not significantly associated with awareness levels. Similarly, the type of TB (χ^2 = 8.355, p = 0.129), diabetes status (χ^2 = 1.763, p = 0.420), and HIV status (χ^2 = 1.411, p = 0.510) did not show statistically significant associations with awareness of patient support systems under NTEP.

Table 19: Multiple Logistic Regression between Socio-demographic variables and Awareness scores (n=400)

Variables		OR	95% CI		p value
			LL	UL	
Age	18-39	0.113	0.032	0.398	0.001
	40-60	0.295	0.088	0.984	0.047
	60+	Ref.			
Gender	Male	2.38	0.86	6.583	0.095
	Female	Ref.			
Employment status	Employed	1.131	0.498	2.567	0.769
	Unemployed	Ref.			
Education status	Illiterate	….	….	….	….
	Primary	0.519	0.071	3.778	0.517
	High school	0.892	0.164	4.869	0.895
	PUC	1.641	0.311	8.656	0.56
	ITI/Diploma	0.742	0.137	4.008	0.729
	Graduation	Ref.			
Category	General	0.788	0.198	3.133	0.735
	ST	2.169	0.476	9.875	0.317
	SC	1.055	0.183	6.092	0.952

	OBC	Ref.			
Family type	Nuclear	0.137	0.009	2.041	0.149
	Joint	0.051	0.004	0.728	0.028
	Broken	0.368	0.017	7.781	0.52
	Problem	Ref.			
Socio economic status	Class I	0.284	0.022	3.621	0.332
	Class II	1.527	0.299	7.784	0.611
	Class III	1.173	0.258	5.338	0.836
	Class IV	1.35	0.297	6.131	0.697
	Class V	Ref.			

The analysis showed a significant association between age and awareness of the scheme. Compared to patients aged 60 years and above, those aged 18–40 years had 0.113 times the odds of having good awareness, indicating an 88.7% lower likelihood of awareness. While those aged 40–60 years had 0.295 times the odds, reflecting a 70.5% lower likelihood of awareness.

Family type was also significantly associated with awareness. Compared to participants from ‘problematic’ family types, those from joint families had 0.051 times the odds of having good awareness, representing a 94.9% lower likelihood of being aware of the scheme ($p = 0.028$).

Other variables such as gender, occupation, caste, education level, and socio-economic status were not significantly associated with awareness. Among the education categories, no statistically significant differences were observed, although patients with higher education were used as the reference group.

SECTION – III: UTILIZATION OF NIKSHAY POSHAN YOJANA (NPY)

Table 20: Utilization of patient support system among patients diagnosed with TB (n=400)

Utilization	Frequency	Percentage
No	232	58.0
Yes	168	42.0
TOTAL	**400**	**100**

Out of 400 study participants, 232 (58%) participants had not utilized TB patient support systems, while 168 (42%) participants had utilized these services.

Graph 18: Utilization of TB patient support system among patients (n=400)

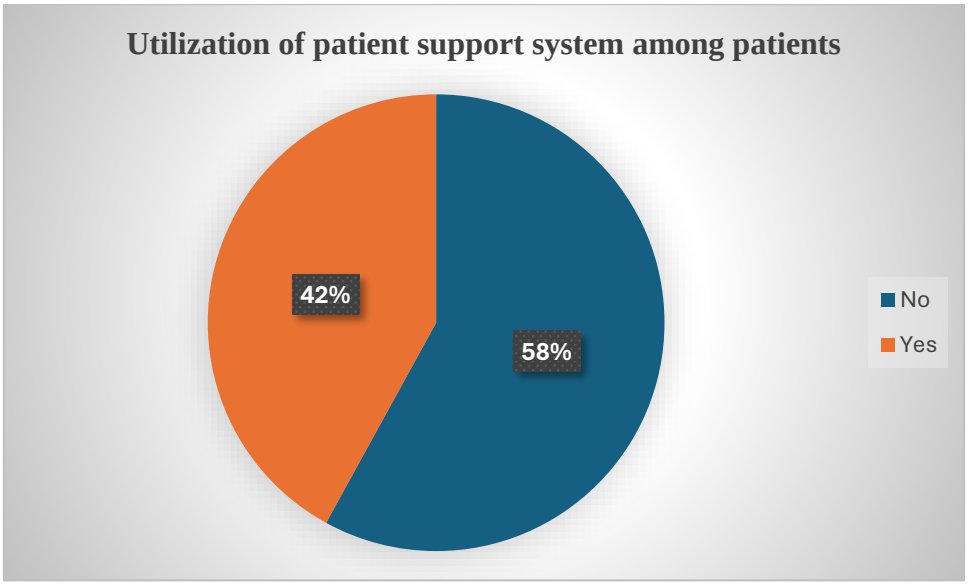


Table 21: Association between socio demographic variables and utilization of 'Patient support systems'

Socio demographic variables of study participants		Utilization of PSS		Chi-square (Sig.)
		Yes n (%)	No n (%)	
Age	18-40 yrs	78 (34.4)	149 (65.6)	18.611 (0.001) *
	40-60 yrs	72 (48.3)	77 (51.7)	
	60+ yrs	18 (75.0)	6 (25.0)	
Gender	Male	117 (42.7)	157 (57.3)	0.175 (0.675)
	Female	51 (40.5)	75 (59.5)	
Employment status	Employed	68 (43.3)	89 (56.7)	0.183 (0.669)
	Unemployed	100 (41.2)	143 (58.8)	
Educational status	Illiterate	3 (60.0)	2 (40.0)	32.340 (0.0001) *
	Primary	33 (73.3)	12 (26.7)	
	High school	67 (46.5)	77 (53.5)	
	PUC	32 (38.6)	51 (61.4)	
	ITI/Diploma	28 (28.0)	72 (72.0)	
	Graduation	5 (21.7)	18 (78.3)	

Marital status	Married	124 (41.8)	173 (58.2)	14.794 (0.002) *
	Unmarried	24 (32.0)	51 (68.0)	
	Widow	4 (80.0)	1 (20.0)	
	Widower	15 (75.0)	5 (25.0)	
	Divorce/Separated	1 (33.3)	2 (66.7)	
Pregnant	Yes	1 (100.0)	0 (0)	1.428 (0.537)
	No	52 (40.6)	76 (59.4)	
	Not applicable	115 (42.4)	156 (57.6)	
Religion	Hindu	146 (42.4)	198 (57.6)	0.504 (0.836)
	Muslim	21 (40.4)	31 (59.6)	
	Christian	1 (25.0)	3 (75.0)	
	Others	0 (0)	0 (0)	
Category	General	122 (43.6)	158 (56.4)	1.014 (0.812)
	ST	21 (37.5)	35 (62.5)	
	SC	12 (37.5)	20 (62.5)	
	OBC	13 (40.6)	19 (59.4)	
Family type	Nuclear	91 (48.7)	96 (51.3)	26.278 (0.001) *
	Joint	63 (32.0)	134 (68.0)	

	Broken	12 (92.3)	1 (7.7)	
	Problem	2 (66.7)	1 (33.3)	
Socio economic status	Class I	1 (3.6)	27 (96.4)	36.323 (0.0001) *
	Class II	25 (35.7)	45 (64.3)	
	Class III	62 (38.8)	98 (61.3)	
	Class IV	60 (51.7)	56 (48.3)	
	Class V	20 (76.9)	6 (23.1)	
Ration card	APL	9 (14.5)	53 (85.5)	25.487 (0.001) *
	BPL	159 (47.0)	179 (53.0)	
Aadhar card	Yes	167 (42.2)	229 (57.8)	0.479 (0.642)
	No	1 (25.0)	3 (75.0)	
Bank account	Yes	162 (43.1)	214 (56.9)	3.029 (0.082)
	No	6 (25.0)	18 (75.0)	
Type of TB	Pulmonary	110 (46.4)	127 (53.6)	5.107 (0.044) *
	Extrapulmonary	58 (35.8)	104 (64.2)	
	MDR	0 (0)	1 (100.0)	
	XDR	0 (0)	0 (0)	
	Diabetic	13 (40.6)	19 (59.4)	0.027 (1.000)

Diabetes status	Non-Diabetic	155 (42.1)	213 (57.9)	
HIV Status	Positive	14 (60.9)	9 (39.1)	3.567 (0.059)
	Negative	154 (40.8)	223 (59.2)	

(*<0.05 significance & chi-square value is obtained by Fisher exact test)

Among the 400 participants, older age groups (60+ years) had the highest utilization (75%), while younger participants (18-40 years) had the lowest utilization rate (34.4%). Participants with primary education (73.3%) were more likely to utilize patient support system than graduates (21.7%) ($\chi^2 = 32.340$, $p = 0.0001$). Marital status ($\chi^2 = 14.794$, $p=0.002$), socio-economic status ($\chi^2 = 36.323$, $p=0.0001$), ration card status ($\chi^2 = 25.487$, $p=0.001$), and type of TB ($\chi^2 = 5.107$, $p=0.044$) were significantly associated with utilization.

Age showed a significant association ($\chi^2 = 18.611$, $p=0.001$), with higher utilization among older individuals, particularly those aged 60 years and above (75.0%). Educational status also demonstrated a strong relationship ($\chi^2 = 32.340$, $p = 0.0001$), as individuals with lower education levels, such as those with only primary schooling (73.3%), showed greater utilization compared to graduates (21.7%). Marital status was significantly associated ($\chi^2 = 14.794$, $p = 0.002$), with widows (80.0%) and widowers (75.0%) utilizing patient support systems more frequently than married (41.8%) or unmarried individuals (32.0%). Family type showed a significant impact ($\chi^2 = 26.278$, $p = 0.001$), where those from broken families (92.3%) and problematic family backgrounds (66.7%) had higher utilization compared to nuclear (48.7%) and joint families (32.0%). Socioeconomic status was also significantly associated ($\chi^2 = 36.323$, $p = 0.0001$), with higher utilization among individuals from lower socioeconomic classes, particularly Class V (76.9%), while those from Class I had the lowest utilization

(3.6%). Ration card status was another significant factor ($\chi^2 = 25.487$, $p = 0.001$), with those holding Below Poverty Line (BPL) cards (47.0%) utilizing support systems more frequently compared to Above Poverty Line (APL) cardholders (14.5%).

Type of tuberculosis (TB) showed a significant association ($\chi^2 = 5.107$, $p = 0.044$), where pulmonary TB patients (46.4%) had higher utilization compared to extrapulmonary TB patients (35.8%). Other variables, such as gender, employment status, religion, category, Aadhar card possession, bank account status, comorbidities and HIV status, did not show significant associations with the utilization of patient support systems. These findings indicate that older age, lower education, widowhood, broken family structures, lower socioeconomic status, BPL status and pulmonary TB were key factors influencing the utilization of patient support services.

Table 22: Multiple Logistic Regression between Socio-demographic variables and Utilization scores (n=400)

Variables		OR	95% CI		p value
			LL	UL	
Age	18-40	0.16	0.053	0.479	0.001
	40-60	0.284	0.096	0.837	0.022
	60+	Ref.			
Gender	Male	0.944	0.501	1.781	0.86
	Female	Ref.			
Employment status	Employed	1.152	0.635	2.09	0.642
	Unemployed	Ref.			
Education status	Illiterate	1.043	0.076	14.244	0.975
	Primary	7.952	1.434	44.115	0.018
	High school	3.598	0.745	17.368	0.111
	PUC	3.593	0.735	17.567	0.114
	ITI/Diploma	1.889	0.386	9.237	0.432
	Graduation	Ref.			
Category	General	0.611	0.256	1.461	0.268
	ST	0.616	0.224	1.692	0.347
	SC	0.407	0.123	1.352	0.142
	OBC	Ref.			

Family type	Nuclear	0.57	0.04	8.039	0.677
	Joint	0.24	0.018	3.303	0.286
	Broken	0.755	0.037	15.235	0.855
	Problem	Ref.			
Socio economic status	Class I	0.032	0.003	0.305	0.003
	Class II	0.309	0.1	0.952	0.041
	Class III	0.388	0.14	1.079	0.07
	Class IV	0.517	0.187	1.428	0.203
	Class V	Ref.			

Age was found to be a significant factor influencing the utilization of Patient Support Systems. Compared to patients aged 60 years and above, those in the 18–40 years age group were 0.16 times as likely to utilize the scheme, indicating an 84% lower likelihood of utilization. Similarly, participants aged 40–59 years had 0.284 times the likelihood of utilizing the scheme, reflecting a 71.6% lower chance of utilization as compared to the 60 years and above age group.

Education status also showed a strong association. Patients who had studied up to the primary level were 7.95 times more likely to utilize the scheme compared to those who were graduates, suggesting that those with basic formal education were offered more support under the scheme.

Socio-economic status (SES) demonstrated an inverse relationship with utilization. When compared to Class V (lowest SES), patients from higher socio-economic classes were significantly less likely to use the support system. Specifically, those in Class I, II, and III had 0.032, 0.309, and 0.388 times the likelihood of utilizing the scheme, which corresponds to a 96.8%, 60.1%, and 71.2% lower chance of utilization, respectively. These findings indicate that individuals from lower socio-economic groups were more likely to utilize the support systems than those from higher-income backgrounds.

No other socio-demographic variables, including gender, occupation, category, family type, or presence of comorbidities, were found to be significantly associated with utilization of Patient Support Systems.

Table 23: Distribution of participants by enrolment in Nikshay Poshan Yojna (n=400)

Enrolment	Frequency	Percentage
Yes	168	42
No	232	58
TOTAL	**400**	**100**

Among the 400 study participants, 169 (42%) participants had enrolled in the Nikshay Poshan Yojna (NPY), while 231 (58%) participants were never enrolled in the scheme.

Graph 19: Distribution of participants by enrolment in Nikshay Poshan Yojna (n=400)

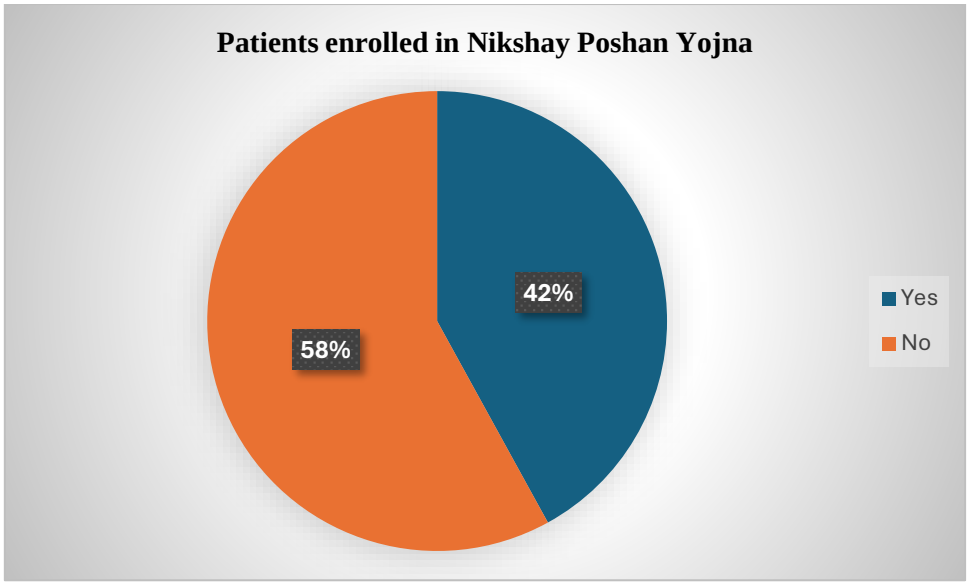


Table 24: Distribution of study participants based on the number of instalments (n=168).

Number of Instalments	Number of Participants	Percentage
1 Instalment	17	10.1
2 Instalments	32	19.0
3 Instalments	49	29.2
4 Instalments	43	25.6
5 or more Instalments	27	16.1
Total	**168**	**100**

Among the 168 study participants who received benefits, 17 (10.1%) participants received only 1 instalment, 32 (19%) participants received 2 instalments, 49 (29.2%) participants received 3 instalments, 43 (25.6%) participants received 4 instalments, and 27 (16.1%) participants received 5 or more instalments.

Graph 20: Distribution of study participants based on the number of instalments (n=168).

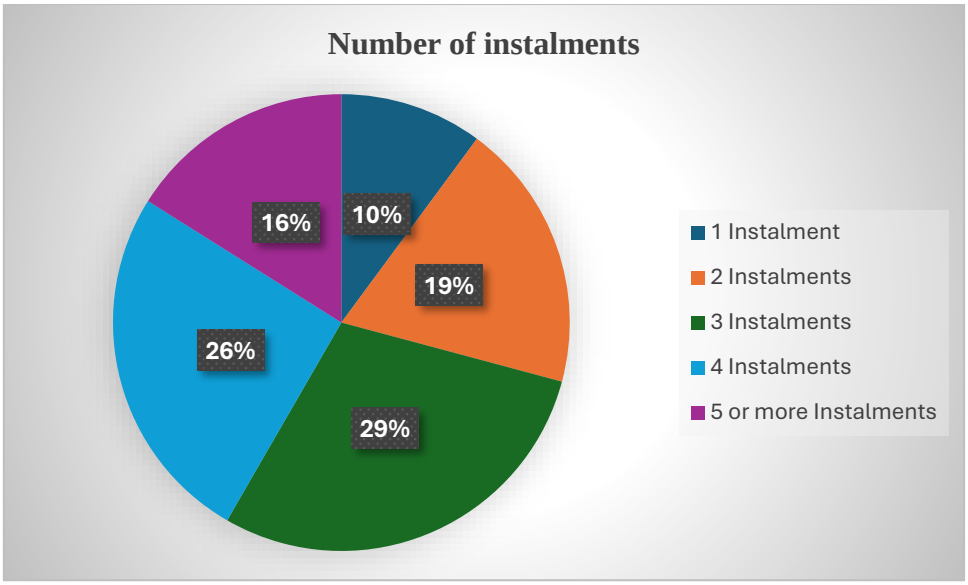


Table 25: Distribution of study participants based on the total amount received (INR) under the Nikshay Poshan Yojana (NPY) for TB Patient Support Systems (n=168).

Amount Received (INR)	Number of Participants	Percentage
1000-2000	35	19.8
2000-3000	83	49.4
More than 3000	50	29.8
Total	**168**	**100**

Among the 168 participants who had received benefits, 35 (19.8%) participants received a total of Rs. 1000-2000, 83 (49.4%) participants received Rs. 2000-3000 and 50 (29.8%) participants received more than Rs. 3000. The majority of the participants who

received benefit (79.2%) received Rs. 2000 or more. The median amount received under the Nikshay Poshan Yojana (NPY) by the study participants was INR 2,500.

Graph 21: Distribution of study participants based on the total amount received (INR) under the Nikshay Poshan Yojana (NPY) for TB Patient Support Systems (n=168).

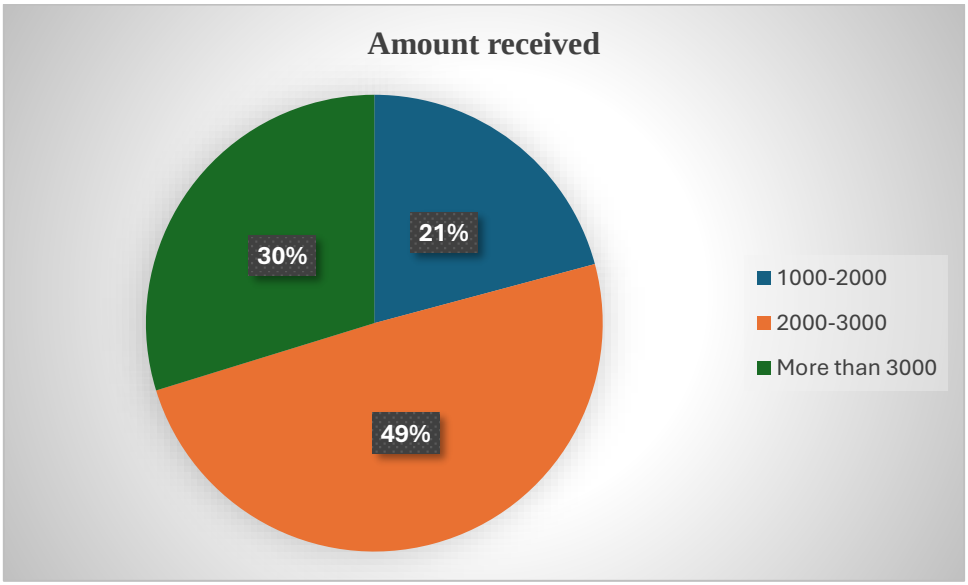


Table 26: Distribution of study participants based on the time taken to receive the first benefit payment under TB Patient Support Systems (n=168).

Time to receive first Benefit	Number of Participants	Percentage
Less than 2 months	10	6.0
2-4 months	57	33.9
4-6 months	49	29.2
More than 6 months	52	30.9
TOTAL	**168**	**100**

Among the 168 participants who received benefits, 10 (6%) participants received their first payment within 2 months, 57 (33.9%) participants received it between 2-4 months, 49 (29.2%) participants received it within 4-6 months and 52 (30.9%) participants had to wait more than 6 months. More than half (60.1%) of the participants experienced delays beyond 4 months. The median time taken by study participants to receive the first benefit payment under the TB Patient Support Systems was 5 months.

Graph 22: Distribution of study participants based on the time taken to receive the first benefit payment under TB Patient Support Systems (n=168).

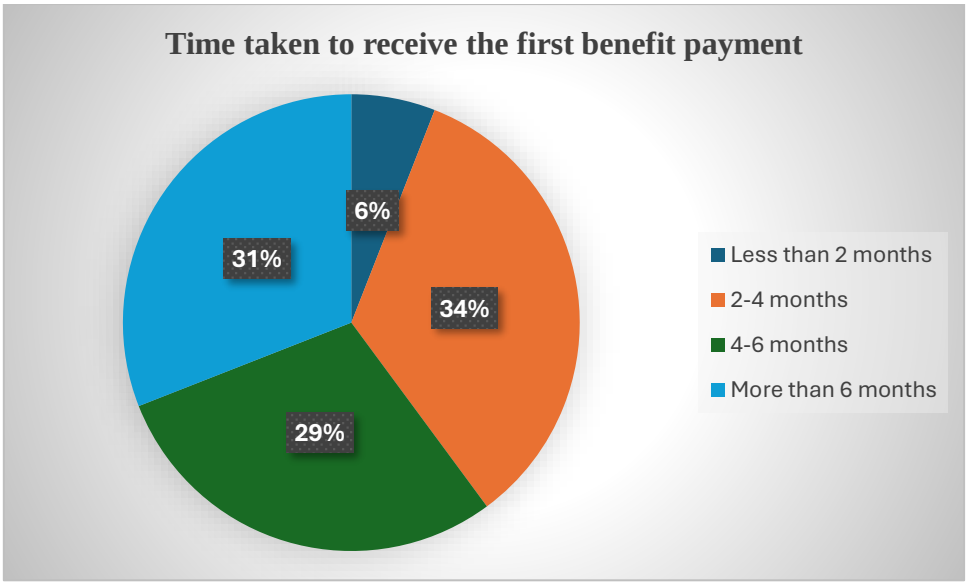


Table 27: Distribution of study participants based on nutritional support received under the Nikshay Poshan Yojana (NPY) (n=168).

Received nutritional support during TB treatment	Frequency	Percentage
Yes	50	29.8
No	118	70.2
TOTAL	**168**	**100**

Only 50 (29.8%) participants received nutritional support, while the majority, 118 (70.2%) participants, reported that they did not receive any nutritional support.

Graph 23: Distribution of study participants based on nutritional support received under the Nikshay Poshan Yojana (NPY) (n=168).

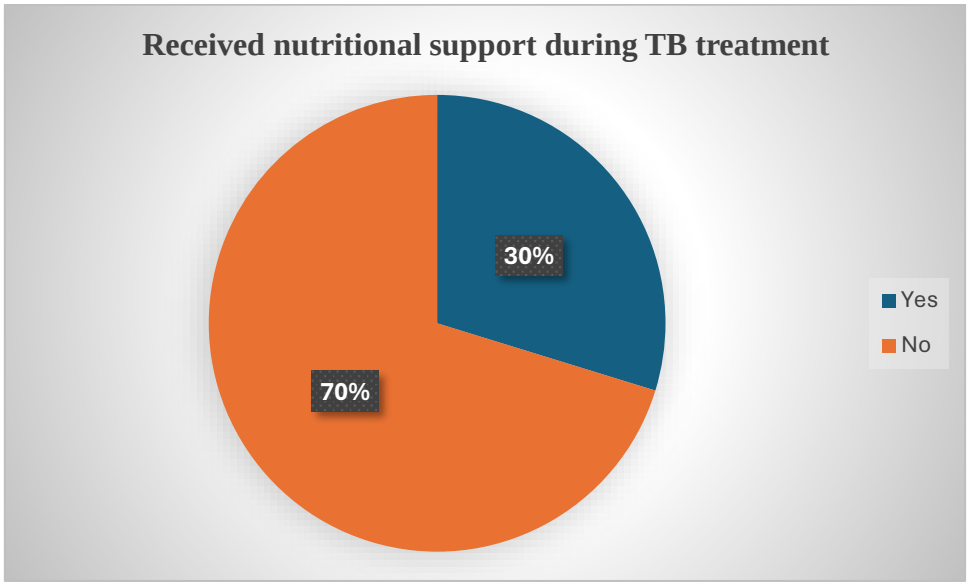


Table 28: Distribution of study participants based on the adequacy of financial and nutritional support received under TB Patient Support Systems (n=168).

Adequate support	Frequency	Percentage (%)
Yes	108	64.2
No	60	35.8
TOTAL	**168**	**100**

Among the 168 participants who received benefits, 108 (64.2%) participants felt that the support was adequate, while 60 (35.8%) participants felt it was insufficient.

Graph 24: Distribution of study participants based on the adequacy of financial and nutritional support received under TB Patient Support Systems (n=168).

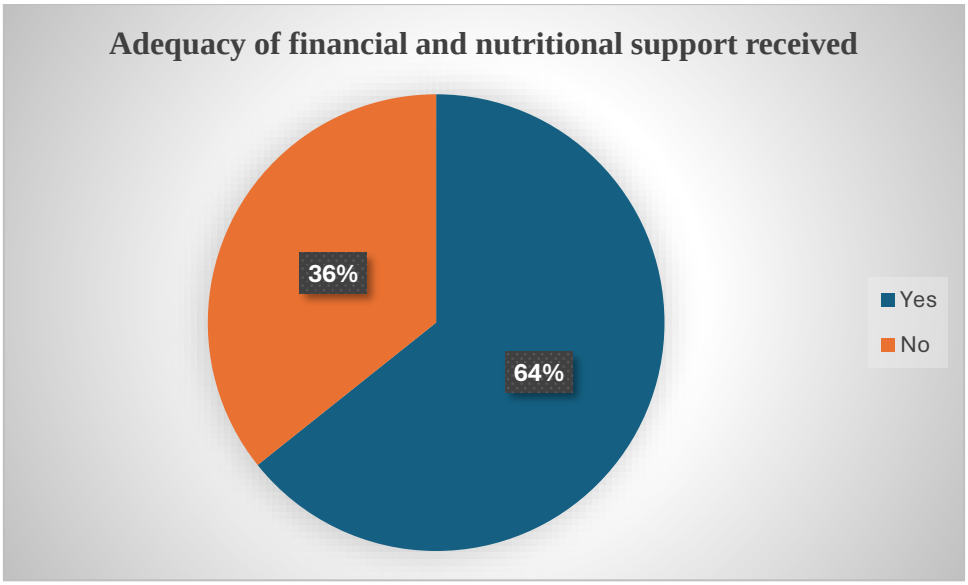


Table 29: Distribution of study participants based on reasons for inadequate support under the Nikshay Poshan Yojana (NPY) (n=60).

Reasons for inadequate support	Frequency	Percentage
Less incentive	57	95.0
Less nutrition	3	5.0
TOTAL	**60**	**100**

Among the 60 participants who found the support inadequate, the majority, 57 participants (95%), cited less financial incentive as the primary reason for dissatisfaction. A small proportion, 3 participants (5%), mentioned insufficient nutrition support as a concern.

Graph 25: Distribution of study participants based on reasons for inadequate support under the Nikshay Poshan Yojana (NPY) (n=60).

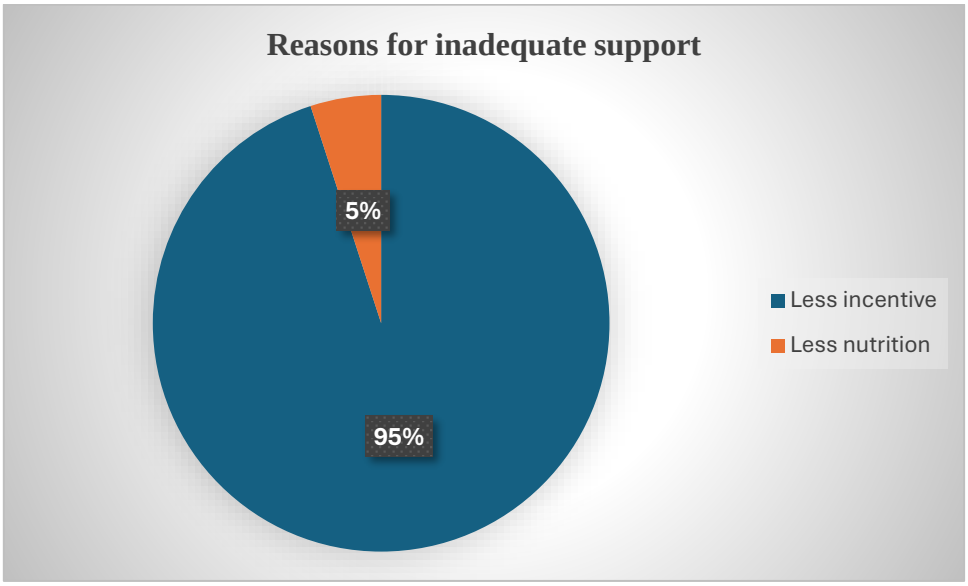


Table 30: Distribution of study participants based on the utilization of financial support under the Nikshay Poshan Yojana (NPY) (n=168).

Where did you spend the money	Frequency	Percentage
Nutrition	110	65.5
Personal needs	12	7.1
Family fulfilment	20	11.9
Other	26	15.5
TOTAL	**168**	**100**

Among the 168 participants who received NPY financial assistance, 110 (65.5%) participants utilized the funds for nutrition, indicating that the majority of beneficiaries prioritized food and dietary supplements, 12 (7.1%) participants spent the money on personal needs, which may include transportation, hygiene or daily expenses, 20 (11.9%) participants used the assistance for family fulfilment, suggesting that some funds were redirected towards household expenses, 26 (15.5%) participants allocated the money for other non-specified expenses, reflecting possible mixed or untracked spending.

Graph 26: Distribution of study participants based on the utilization of financial support under the Nikshay Poshan Yojana (NPY) (n=168).

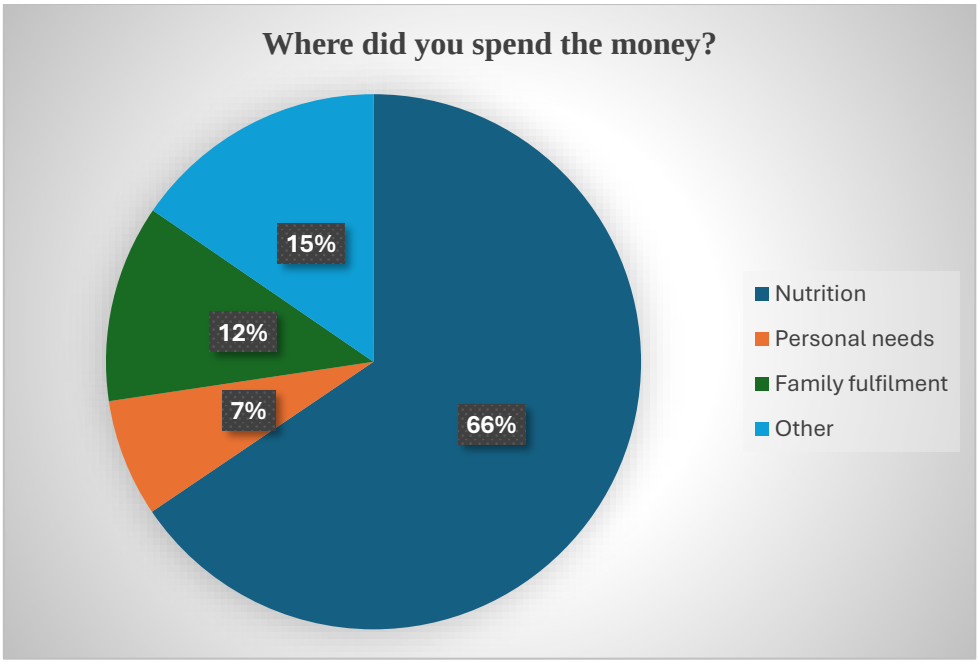


Table 31: Distribution of study participants based on assistance received in withdrawing financial support under the Nikshay Poshan Yojana (NPY) (n=168).

Assistance to withdraw money from Bank	Frequency	Percentage
Self	120	71.4
ASHA worker	5	3.0
Family members	35	20.8
Neighbours/Friends	8	4.8
TOTAL	**168**	**100**

Among the 168 participants who received financial assistance, 120 (71.5%) participants withdrew the money themselves, indicating that the majority of beneficiaries were able to manage their funds independently, 5 (3%) participants received help from ASHA

workers, suggesting limited reliance on community health workers for financial transactions, 35 (20.8%) participants relied on family members to withdraw the money, likely due to illness, physical limitations, or lack of banking knowledge, 8 (4.8%) participants were assisted by neighbours/friends, which could indicate social support in specific cases.

Graph 27: Distribution of study participants based on assistance received in withdrawing financial support under the Nikshay Poshan Yojana (NPY) (n=168).

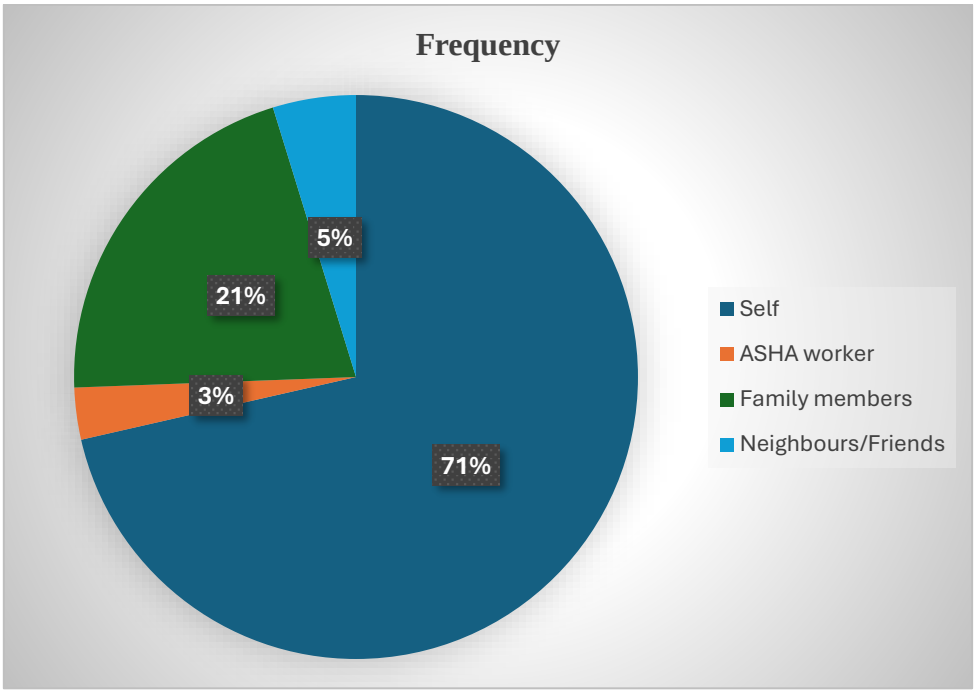


Table 32: Distribution of patients by Utilization of TB Patient Support Systems- Recommendation of Nikshay Poshan Yojna (NPY) by beneficiaries (n=168)

Recommended Nikshay Poshan Yojna to other TB patients	Frequency	Percentage
Yes	140	83.4
No	28	16.6
TOTAL	**168**	**100**

Among the 168 participants who utilized NPY, 140 (83.4%) participants would recommend the scheme to other TB patients, 28 (16.6%) participants would not recommend the scheme to others.

Graph 28: Distribution of study participants based on beneficiary recommendations for the Nikshay Poshan Yojana (NPY) (n=168).

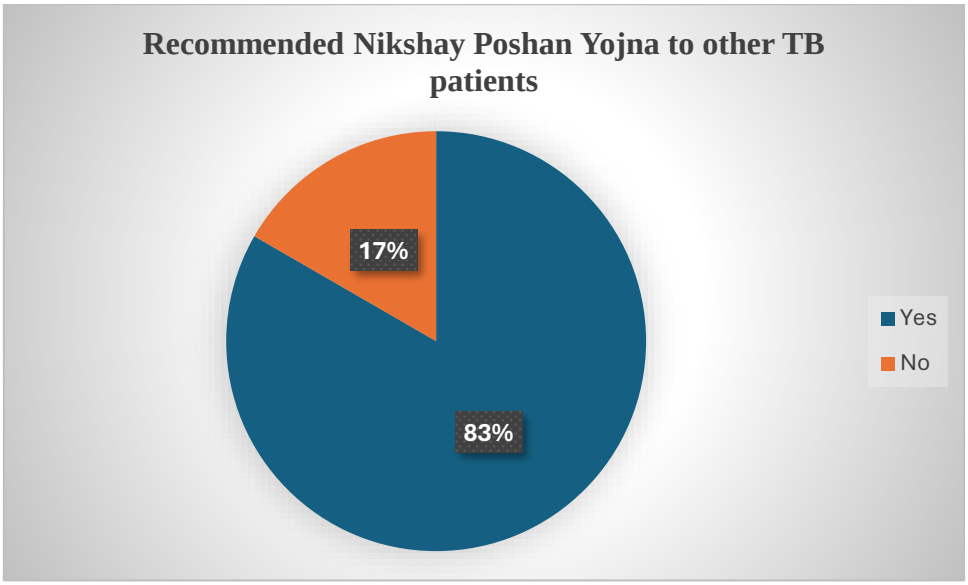


Table 33: Distribution of study participants based on beneficiary suggestions for improving the Nikshay Poshan Yojana (NPY) (n=168).

How do you think the government can improve this service?	Frequency	Percentage
Better incentives	50	37
More follow ups	15	11.1
More nutritional support	30	22.2
More awareness	40	29.6
TOTAL	**168**	**100**

Among the 168 participants who utilized NPY, 50 (37.0%) participants recommended better incentives, indicating that financial support should be increased, 15 (11.1%) participants suggested more follow-ups, highlighting the need for better monitoring and patient engagement, 30 (22.2%) participants wanted more nutrition support, showing that existing food assistance might be insufficient, 40 (29.6%) participants felt the need for more awareness, suggesting that many TB patients are still unaware of the full benefits of the NPY scheme.

Graph 29: Distribution of study participants based on beneficiary suggestions for improving the Nikshay Poshan Yojana (NPY) (n=168).

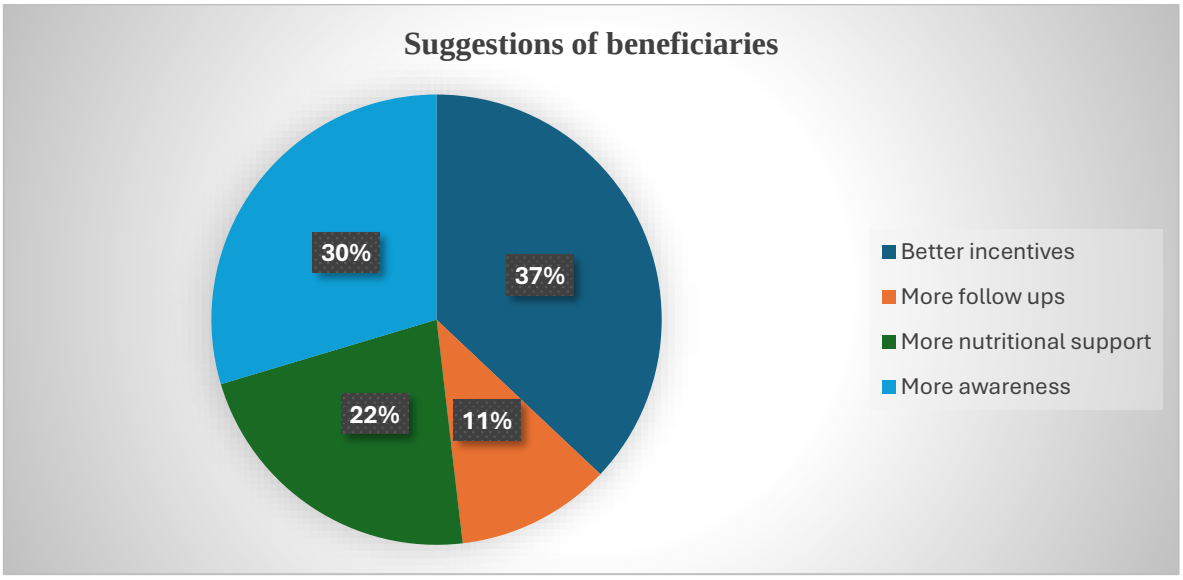


Table 34: Utilization scores of patient support system among TB patients (n=400)

		Frequency	Percentage
Utilization	Poor Utilization	256	64.0
	Average Utilization	68	17.0
	Good Utilization	76	19.0

Among the 400 study participants, 256 (64.0%) participants exhibited poor utilization, indicating a substantial gap in the effective engagement with available support services. A smaller proportion, 68 (17.0%) participants demonstrated average utilization, while only 76 (19.0%) of participants reported good utilization of this system.

Graph 30: Utilization scores of patient support system among TB patients

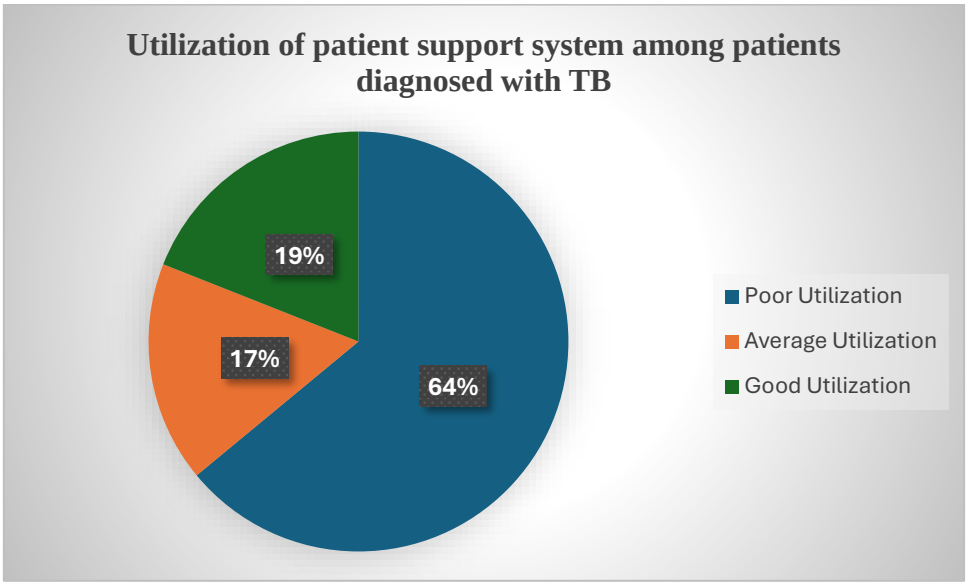


Table 35: Association of socio demographic variables of participants and utilisation of 'Patient support systems'

		Utilization						Chi-square (Sig.)
		Poor Utilization		Average Utilization		Good Utilization		
		n	%	n	%	n	%	
Age (in years)	18-40	163	71.8	37	16.3	27	11.9	28.307 (<0.05) *
	40-60	86	57.7	27	18.1	36	24.2	
	60+	7	29.2	4	s16.7	13	54.2	
Gender	Male	175	63.9	45	16.4	54	19.7	0.402 (0.818)
	Female	81	64.3	23	18.3	22	17.5	
Employment status	Employed	102	65.0	29	18.5	26	16.6	1.176 (0.555)
	Unemployed	154	63.4	39	16.0	50	20.6	
Education status	Illiterate	3	60.0	2	40.0	0	0	34.900 (0<0.05) *
	Primary	16	35.6	11	24.4	18	40.0	
	High school	86	59.7	31	21.5	27	18.8	
	PUC	54	65.1	14	16.9	15	18.1	
	ITI/Diploma	76	76.0	9	9.0	15	15.0	
	Graduation	21	91.3	1	4.3	1	4.3	

Marital status	Married	190	64.0	51	17.2	56	18.9	33.915 (<0.05) *
	Unmarried	57	76.0	12	16.0	6	8.0	
	Widow	1	20.0	3	60.0	1	20.0	
	Widower	5	25.0	2	10.0	13	65.0	
	Divorce/Separated	3	100.0	0	0	0	0	
Pregnant	Yes	0	0.0	1	100.0	0	0.0	4.529 (0.340)
	No	82	64.1	24	18.8	22	17.2	
	Not applicable	174	64.2	43	15.9	54	19.9	
Religion	Hindu	217	63.1	58	16.9	69	20.1	2.111 (0.690)
	Muslim	36	69.2	9	17.3	7	13.5	
	Christian	3	75.0	1	25.0	0	0.0	
	Others	0	0	0	0	0	0	
Category	General	177	63.2	56	20.0	47	16.8	10.686 (0.092)
	ST	37	66.1	4	7.1	15	26.8	
	SC	23	71.9	2	6.3	7	21.9	
	OBC	19	59.4	6	18.8	7	21.9	
Family type	Nuclear	115	61.5	47	25.1	25	13.4	

	Joint	137	69.5	15	7.6	45	22.8	36.617 (<0.05) *
	Broken	3	23.1	5	38.5	5	38.5	
	Problem	1	33.3	1	33.3	1	33.3	
Socio economic status	Class I	27	96.4	1	3.6	0	0.0	30.485 (0.05) *
	Class II	49	70.0	12	17.1	9	12.9	
	Class III	106	66.3	23	14.4	31	19.4	
	Class IV	65	56.0	23	19.8	28	24.1	
	Class V	9	34.6	9	34.6	8	30.8	
Ration card	APL	55	88.7	5	8.1	2	3.2	22.496 (<0.05) *
	BPL	201	59.5	63	18.6	74	21.9	
	No ration card	0	0	0	0	0	0	
Aadhar card	Yes	253	63.9	67	16.9	76	19.2	0.893 (0.800)
	No	3	75.0	1	25.0	0	0.0	
Bank account	Yes	238	63.3	64	17.0	74	19.7	1.841 (0.397)
	No	18	75.0	4	16.7	2	8.3	
Type of TB	Pulmonary	141	59.5	39	16.5	57	24.1	10.951 (0.010) *
	Extrapulmonary	114	70.4	29	17.9	19	11.7	

	MDR	1	100	0	0	0	0	
	XDR	0	0	0	0	0	0	
Comorbiditie s	Diabetic	19	59.4	7	21.9	6	18.8	0.604 (0.739)
	Non- Diabetic	237	64.4	61	16.6	70	19.0	
HIV Status	Positive	9	39.1	4	17.4	10	43.5	8.841 (0.009) *
	Negative	247	65.5	64	17.0	66	17.5	

*<0.05 significance & chi-square value is obtained by Fisher exact test

Associations between various socio-demographic variables and the utilization of patient support systems were identified. Age was a key determinant ($\chi^2 = 28.307$, $p < 0.05$), with older adults (≥60 years) exhibiting higher utilization (54.2%) compared to younger individuals (11.9% in the 18–40 age group). Educational status also showed a significant association ($\chi^2 = 34.900$, $p < 0.05$), with primary-educated individuals (40.0%) demonstrating higher utilization, while graduates exhibited the lowest engagement (4.3%). Marital status was another influential factor ($\chi^2 = 33.915$, $p < 0.05$), where widowed (60.0%) and widowered (65.0%) individuals reported the highest engagement, whereas unmarried individuals (8.0%) had the lowest utilization. Family type significantly influenced utilization ($\chi^2 = 36.617$, $p < 0.05$), with individuals from broken families (38.5%) and those experiencing family problems (33.3%) demonstrating higher reliance on TB patient support systems compared to nuclear (13.4%) and joint family members (22.8%).

Additionally, socioeconomic status played a critical role ($\chi^2 = 30.485$, $p < 0.05$), with individuals from lower socioeconomic classes (Class V: 30.8%) engaging more frequently, whereas Class I individuals exhibited the lowest utilization (0.0%). Ration card

status further underscored this association ($\chi^2 = 22.496$, $p < 0.05$), as BPL cardholders had a higher utilization rate (21.9%) compared to APL cardholders (3.2%). Type of TB significantly influenced utilization ($\chi^2 = 10.951$, $p = 0.010$), with pulmonary TB patients demonstrating the highest engagement (24.1%) compared to extrapulmonary TB patients (11.7%). Lastly, HIV status was a crucial determinant ($\chi^2 = 8.841$, $p = 0.009$), with HIV-positive individuals showing significantly higher utilization (43.5%) than HIV-negative individuals (17.5%).

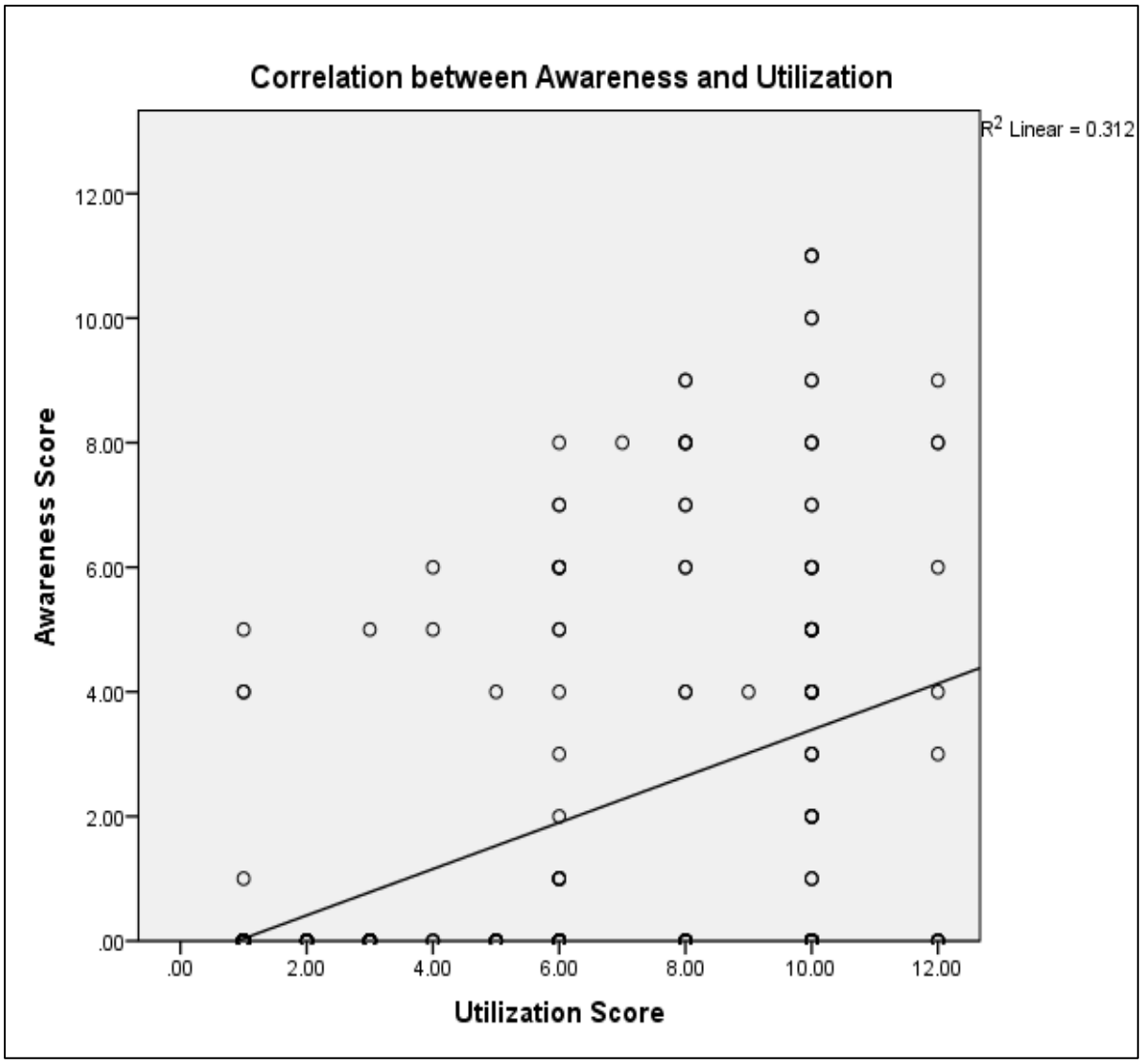
Table 36: Association of awareness level and utilization level among patients (n=400)

	Utilization							
	Poor Utilization		Average Utilization		Good Utilization			
Awareness	**Frequency**	**Percentage**	**Frequency**	**Percentage**	**Frequency**	**Percentage**	**Chi-square value**	**p value**
Poor Awareness	252	72.2	48	13.8	49	14	88.828	0.001*
Average Awareness	4	9.8	18	43.9	19	46.3		
Good Awareness	0	0	2	20	8	80		

Among 400 study participants, 252 (72.2%) participants with poor awareness had poor utilization, 48 (13.8%) had average utilization, and 49 (14%) had good utilization. Among those with average awareness, 4 (9.8%) had poor utilization, 18 (43.9%) had average utilization, and 19 (46.3%) had good utilization. In the good awareness group, none had poor utilization, 2 (20%) had average utilization, and 8 (80%) had good utilization. The chi-square

value for this association was 88.828, with a p-value of 0.001, indicating a statistically significant relationship between awareness levels and utilization of TB patient support systems.

Graph 31: Scatterplot between Awareness scores and Utilization scores of the participants n=400)



Correlation between Awareness and Utilization

Scores	Mean	SD	r	p value
Awareness	1.12	2.50	0.559	0.001*
Utilization	3.90	3.75		

Note – (*) indicates statistically significant correlation at 5% level of significance

Among the 400 study participants, as the awareness scores regarding Patient Support Systems (PSS) increased, the utilisation scores also showed a corresponding increase. Higher awareness was associated with greater utilisation of the available support services, indicating a moderately strong positive correlation ($r = 0.559$, $p = 0.001$), which was statistically significant at the 5% level.

SECTION – IV: TUBERCULOSIS TREATMENT OUTCOMES

Table 37: TB treatment outcome among patients (n=400)

TB treatment outcome	Frequency	Percentage (%)
Cured	99	24.8
Treatment completed	259	64.8
Died	0	0
Lost to follow up	0	0
Treatment failure	42	10.4
Transferred out	0	0
TOTAL	**400**	**100**

Among the 400 study participants included in the study, 99 (24.8%) participants were cured, 259 (64.8%) participants completed treatment, and 42 (10.4%) participants experienced treatment failure after the end of DOTS treatment. None of the participants died, were lost to follow up or transferred out during the study.

Graph 32: TB treatment outcome among registered patients (n=400)

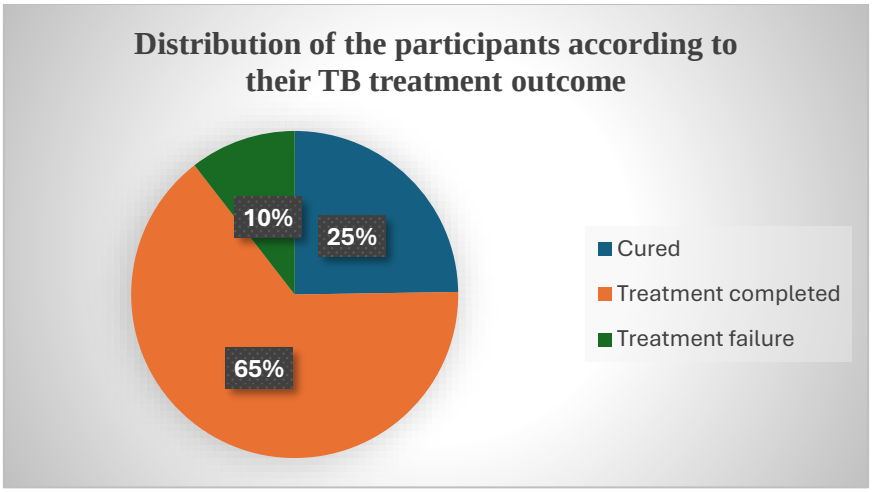


Table 38: Association of awareness levels and TB treatment outcomes among patients (n=400)

	TB Treatment Outcome							
	Cured		Treatment completed		Treatment failure (%)			
Awareness level	**Frequency**	**Percentage**	**Frequency**	**Percentage**	**Frequency**	**Percentage**	**Chi-square value**	**p value**
Poor Awareness	93	26.6	223	63.9	33	9.5	8.012	0.091
Average Awareness	5	12.2	28	68.3	8	19.5		
Good Awareness	1	10	8	80	1	10		

Among 400 study participants, 93 (26.6%) with poor awareness were cured, 223 (63.9%) completed treatment, and 33 (9.5%) experienced treatment failure. Among those with average awareness, 5 (12.2%) were cured, 28 (68.3%) completed treatment, and 8 (19.5%) had

treatment failure. In the good awareness group, 1 (10%) participant was cured, 8 (80%) completed treatment, and 1 (10%) experienced treatment failure. The chi-square value for this association was 8.012, with a p-value of 0.091, indicating no statistically significant relationship between awareness levels and TB treatment outcomes.

Table 39: Association of utilization levels and TB treatment outcomes among patients (n=400)

	TB Treatment Outcome							
	Cured		Treatment completed		Treatment failure (%)			
Utilization level	**Frequency**	**Percentage**	**Frequency**	**Percentage**	**Frequency**	**Percentage**	**Chi-square value**	**p value**
Poor Utilization	74	28.9	160	62.5	22	8.6	15.24	.004*
Average Utilization	10	14.7	53	77.9	5	7.4		
Good Utilization	15	19.7	46	60.5	15	19.7		

Among 400 study participants, 74 (28.9%) with poor utilization were cured, 160 (62.5%) completed treatment, and 22 (8.6%) experienced treatment failure. Among those with average utilization, 10 (14.7%) were cured, 53 (77.9%) completed treatment, and 5 (7.4%) had treatment failure. In the good utilization group, 15 (19.7%) participants were cured, 46 (60.5%) completed treatment, and 15 (19.7%) experienced treatment failure. The chi-square value for this association was 15.24, with a p-value of 0.004, indicating a statistically significant relationship between utilization levels and TB treatment outcomes.

SECTION – V: ATTITUDE AND PRACTICES TOWARDS TUBERCULOSIS

Table 40: Attitudes Towards TB, its Treatment, and NTEP Services (n=400)

			Frequency	Percentage
ATTITUDE TOWARDS TB	Informed about TB's long-term effects	Agree	195	48.8
		Disagree	205	51.2
	Given info on preventing TB spread	Agree	228	57
		Disagree	172	43
ATTITUDE TOWARDS TREATMENT	Noticed symptom improvement	Agree	308	77
		Disagree	92	23
	Informed about full-course importance	Agree	208	52
		Disagree	192	48
ATTITUDE TOWARDS SERVICES UNDER NTEP	Satisfaction with services	Very Dissatisfied	28	7
		Dissatisfied	70	17.5
		Neutral	154	38.5
		Satisfied	62	15.5
		Very Satisfied	86	21.5
	Increase awareness of Nikshay Poshan Yojna	Strongly Disagree	8	2
		Disagree	16	4
		Neutral	98	24.5

		Agree	111	27.8
		Strongly Agree	167	41.7

Among 400 study participants, 195 (48.8%) participants agreed that they were informed about TB's long-term effects, while 205 (51.2%) were not informed. Regarding information on preventing TB spread, 228 (57%) agreed that they received information, whereas 172 (43%) did not.

In terms of attitude towards treatment, 308 (77%) participants reported noticing symptom improvement, while 92 (23%) did not. Additionally, 208 (52%) were informed about the importance of completing the full course of treatment, whereas 192 (48%) were not informed.

Regarding satisfaction with services under the National Tuberculosis Elimination Program (NTEP), 28 (7%) participants were very dissatisfied, 70 (17.5%) were dissatisfied, 154 (38.5%) remained neutral, 62 (15.5%) were satisfied, and 86 (21.5%) were very satisfied.

When asked whether awareness of the Nikshay Poshan Yojana should be increased, 167 (41.7%) strongly agreed, 111 (27.8%) agreed, 98 (24.5%) remained neutral, 16 (4%) disagreed and 8 (2%) participants strongly disagreed.

Table 41: Assessment of Attitude of TB patients (n=400)

Attitude	Frequency	Percentage
Poor	90	22.5
Average	274	68.5
Good	36	9
TOTAL	**400**	**100**

Among the 400 study participants, 90 (22.5%) participants had a poor attitude, 274 (68.5%) participants had an average attitude, and 36 (9%) participants demonstrated a good attitude towards TB patient support systems.

Graph 33: Assessment of Attitude of TB patients (n=400)

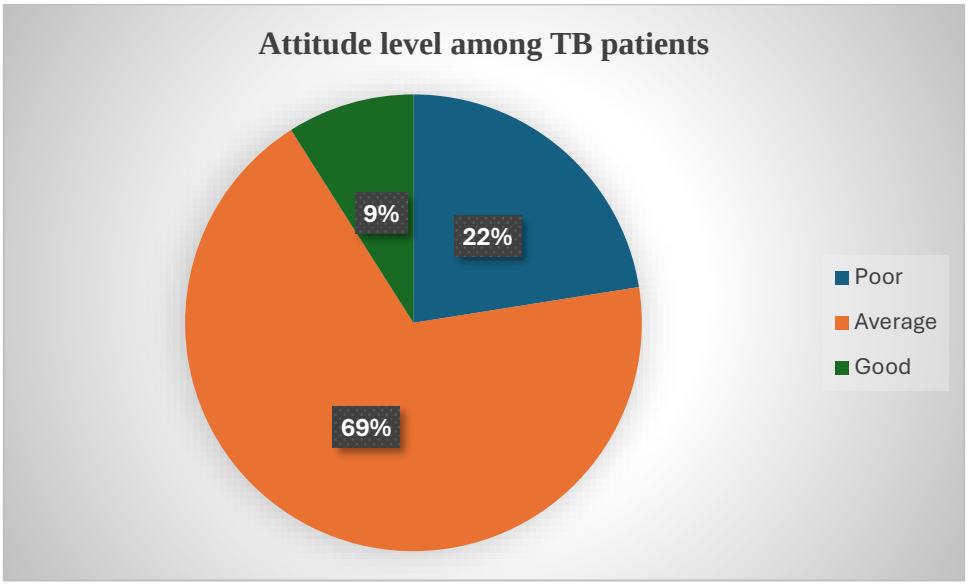


Table 42: Association between Socio-demography and Attitude towards 'Patient Support Systems' among patients diagnosed with Tuberculosis (n=400)

Socio demographic variables		Attitude			Chi-square (Sig.)
		Poor n (%)	Average n (%)	Good n (%)	
Age (in years)	18-40	57 (25.1)	153 (67.4)	17 (7.5)	5.389 (0.250)
	40-60	31 (20.8)	101 (67.8)	17 (11.4)	
	60+	2 (8.3)	20 (83.3)	2 (8.3)	
Gender	Male	60 (21.9)	188 (68.6)	26 (9.5)	0.373 (0.830)
	Female	30 (23.8)	86 (68.3)	10 (7.9)	
Employment Status	Employed	32 (20.4)	107 (68.2)	18 (11.5)	2.264 (0.322)
	Unemployed	58 (23.9)	167 (68.7)	18 (7.4)	
Education status	Illiterate	1 (20.0)	4 (80.0)	0 (0)	3.717 (0.961)
	Primary	11 (24.4)	31 (68.9)	3 (6.7)	
	High school	36 (25.0)	98 (68.1)	10 (6.9)	
	PUC	16 (19.3)	58 (69.9)	9 (10.8)	
	ITI/Diploma	22 (22.0)	67 (67.0)	11 (11.0)	
	Graduation	4 (17.4)	16 (69.6)	3 (13.0)	

Marital status	Married	67 (22.6)	201 (67.7)	29 (9.8)	5.429 (0.657)
	Unmarried	18 (24.0)	52 (69.3)	5 (6.7)	
	Widow	0 (0.0)	5 (100.0)	0 (0.0)	
	Widower	3 (15.0)	15 (75.0)	2 (10.0)	
	Divorce/Separated	2 (66.7)	1 (33.3)	0 (0.0)	
Pregnant	Yes	0 (0)	1 (100.0)	0 (0)	1.491 (0.959)
	No	30 (23.4)	87 (68.0)	11 (8.6)	
	Not applicable	60 (22.1)	186 (68.6)	25 (9.2)	
Religion	Hindu	75 (21.8)	237 (68.9)	32 (9.3)	3.212 (0.452)
	Muslim	14 (26.9)	35 (67.3)	3 (5.8)	
	Christian	1 (25.0)	2 (50.0)	1 (25.0)	
	Others	0 (0.0)	0 (0.0)	0 (0.0)	
Category	General	62 (22.1)	198 (70.7)	20 (7.1)	9.492 (0.133)
	ST	15 (26.8)	35 (62.5)	6 (10.7)	
	SC	9 (28.1)	17 (53.1)	6 (18.8)	
	OBC	4 (12.5)	24 (75.0)	4 (12.5)	
Family type	Nuclear	40 (21.4)	125 (66.8)	22 (11.8)	5.708 (0.392)
	Joint	47 (23.9)	138 (70.1)	12 (6.1)	

	Broken	3 (23.1)	8 (61.5)	2 (15.4)	
	Problem	0 (0)	3 (100.0)	0 (0)	
Socio economic status	Class I	2 (7.1)	21 (75.0)	5 (17.9)	6.850 (0.553)
	Class II	16 (22.9)	49 (70.0)	5 (7.1)	
	Class III	40 (25.0)	107 (66.9)	13 (8.1)	
	Class IV	27 (23.3)	79 (68.1)	10 (8.6)	
	Class V	5 (19.2)	18 (69.2)	3 (11.5)	
Ration card	APL	9 (14.5)	46 (74.2)	7 (11.3)	2.981 (0.225)
	BPL	81 (24.0)	228 (67.5)	29 (8.6)	
Aadhar card	Yes	88 (22.2)	273 (68.9)	35 (8.8)	4.411 (0.117)
	No	2 (50.0)	1 (25.0)	1 (25.0)	
Bank account	Yes	83 (22.1)	259 (68.9)	34 (9.0)	0.651 (0.722)
	No	7 (29.2)	15 (62.5)	2 (8.3)	
Type of TB	Pulmonary	54 (22.8)	159 (67.1)	24 (10.1)	4.607 (0.363)
	Extrapulmonary	35 (21.6)	115 (71.0)	12 (7.4)	
	MDR	1 (100.0)	0 (0)	0 (0)	
Diabetes status	Diabetic	6 (18.8)	24 (75.0)	2 (6.3)	0.724 (0.696)
	Non-Diabetic	84 (22.8)	250 (67.9)	34 (9.2)	

HIV Status	Positive	4 (17.4)	17 (73.9)	2 (8.7)	0.390 (0.823)
	Negative	86 (22.8)	257 (68.2)	34 (9.0)	

(*<0.05 significance & chi-square value is obtained by Fisher exact test)

Among the 400 study participants, older adults (60+ years) exhibited the most positive attitudes toward patient support systems, with 83.3% falling in the average category. Conversely, younger participants (18-40 years) had the highest proportion of poor attitudes (25.1%). No significant association was found between gender ($\chi^2 = 0.373$, $p = 0.830$), education ($\chi^2 = 3.717$, $p = 0.961$), occupation ($\chi^2 = 2.264$, $p = 0.322$), or other socio-demographic factors with attitude levels. Similarly, clinical characteristics such as type of tuberculosis ($\chi^2 = 4.607$, $p = 0.363$), diabetes ($\chi^2 = 0.724$, $p = 0.696$), and HIV status ($\chi^2 = 0.390$, $p = 0.823$) did not show significant associations with attitude toward patient support systems.

Table 43: Practices regarding Medication Adherence, monitoring & testing and daily activities among TB patients (n=400)

Practices			**Frequency**	**Percentage**
Medication Adherence and Management	Experienced any medication side effects?	Yes	182	45.5
		No	218	54.5
	Following treatment as prescribed?	Yes	339	84.7
		No	61	15.3
	Missed any TB doses?	Yes	93	23.3
		No	307	76.7
Monitoring and Testing	Had sputum tests during treatment?	Yes	358	89.5
		No	42	10.5

	Had follow-up sputum tests after treatment?	Yes	385	96.2
		No	15	3.8
Daily Activities and Support	Able to continue daily activities during treatment?	Yes	99	24.8
		No	301	75.2
	Received any support or counselling?	Yes	5	1.3
		No	395	98.7
	Completed your TB treatment?	Yes	383	95.7
		No	17	4.3

Table 44: Assessment of practice level among TB patients (n=400)

Practice	Frequency	Percentage
Poor	59	14.8
Average	156	39.0
Good	185	46.3
TOTAL	**400**	**100**

Out of 400 study participants, 59 (14.8%) participants had poor practices, 156 (39%) participants had average practices, and 185 (46.3%) participants demonstrated good practices regarding patient support systems.

Graph 34: Assessment of practice level among TB patients (n=400)

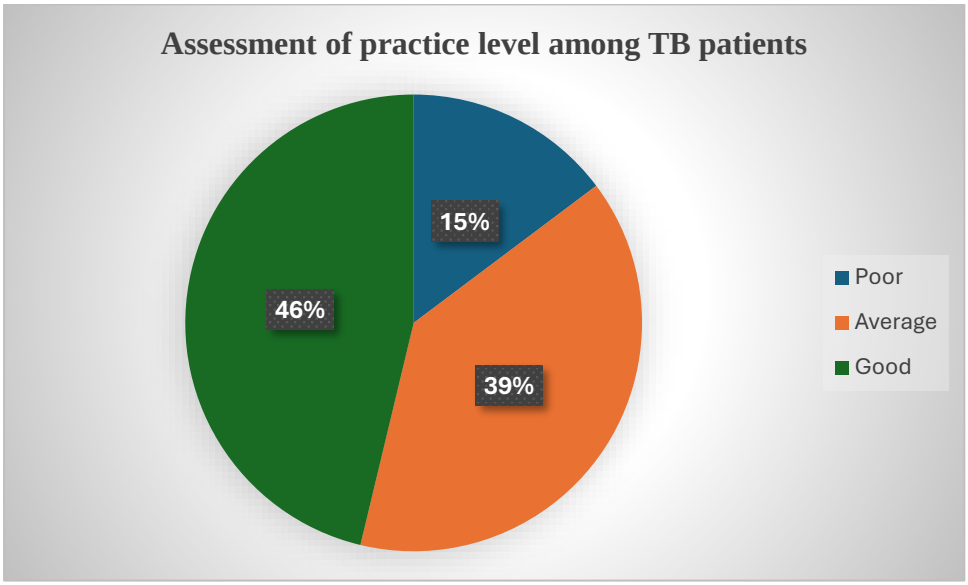


Table 45: Association between Socio-demography and Practice level among patients diagnosed with Tuberculosis (n=400)

Socio demographic variable		Practice level			Chi-square (Sig.)
		Poor n (%)	Average n (%)	Good n (%)	
Age (in yrs)	18-40	35 (15.4)	93 (41.0)	99 (43.6)	1.515 (0.824)
	40-60	21 (14.1)	54 (36.2)	74 (49.7)	
	60+	3 (12.5)	9 (37.5)	12 (50.0)	
Gender	Male	44 (16.1)	107 (39.1)	123 (44.9)	1.358 (0.507)
	Female	15 (11.9)	49 (38.9)	62 (49.2)	
Employment status	Employed	25 (15.9)	56 (35.7)	76 (48.4)	1.237 (0.539)

	Unemployed	34 (14.0)	100 (41.2)	109 (44.9)	
Education status	Illiterate	0 (0)	2 (40.0)	3 (60.0)	26.518 (0.003)*
	Primary	9 (20.0)	10 (22.2)	26 (57.8)	
	High school	16 (11.1)	61 (42.4)	67 (46.5)	
	PUC	9 (10.8)	40 (48.2)	34 (41.0)	
	ITI/Diploma	15 (15.0)	38 (38.0)	47 (47.0)	
	Graduation	10 (43.5)	5 (21.7)	8 (34.8)	
Marital status	Married	39 (13.1)	114 (38.4)	144 (48.5)	13.034 (0.066)
	Unmarried	16 (21.3)	35 (46.7)	24 (32.0)	
	Widow	1 (20.0)	1 (20.0)	3 (60.0)	
	Widower	3 (15.0)	4 (20.0)	13 (65.0)	
	Divorce/Separated	0 (0.0)	2 (66.7)	1 (33.3)	
Pregnant	Yes	1 (100.0)	0 (0)	0 (0)	4.966 (0.246)
	No	15 (11.7)	51 (39.8)	62 (48.4)	

	Not applicable	43 (15.9)	105 (38.7)	123 (45.4)	
Religion	Hindu	51 (14.8)	135 (39.2)	158 (45.9)	4.677 (0.290)
	Muslim	6 (11.5)	21 (40.4)	25 (48.1)	
	Christian	2 (50.0)	0 (0)	2 (50.0)	
Category	General	40 (14.3)	105 (37.5)	135 (48.2)	4.151 (0.658)
	ST	8 (14.3)	27 (48.2)	21 (37.5)	
	SC	5 (15.6)	14 (43.8)	13 (40.6)	
	OBC	6 (18.8)	10 (31.3)	16 (50.0)	
Family type	Nuclear	37 (19.8)	70 (37.4)	80 (42.8)	15.455 (0.008) *
	Joint	17 (8.6)	81 (41.1)	99 (50.3)	
	Broken	4 (30.8)	5 (38.5)	4 (30.8)	
	Problem	1 (33.3)	0 (0)	2 (66.7)	
Socio economic status	Class I	9 (32.1)	6 (21.4)	13 (46.4)	13.931 (0.084)
	Class II	10 (14.3)	27 (38.6)	33 (47.1)	

	Class III	21 (13.1)	67 (41.9)	72 (45.0)	
	Class IV	12 (10.3)	46 (39.7)	58 (50.0)	
	Class V	7 (26.9)	10 (38.5)	9 (34.6)	
Ration card	APL	15 (24.2)	20 (32.3)	27 (43.5)	5.055 (0.076)
	BPL	44 (13.0)	136 (40.2)	158 (46.7)	
Aadhar card	Yes	59 (14.9)	153 (38.6)	184 (46.5)	1.626 (0.375)
	No	0 (0.0)	3 (75.0)	1 (25.0)	
Bank account	Yes	57 (15.2)	144 (38.3)	175 (46.5)	1.621 (0.445)
	No	2 (8.3)	12 (50.0)	10 (41.7)	
Type of TB	Pulmonary	35 (14.8)	98 (41.4)	104 (43.9)	2.894 (0.616)
	Extrapulmonary	24 (14.8)	58 (35.8)	80 (49.4)	
	MDR	0 (0)	0 (0)	1 (100.0)	
	XDR	0 (0)	0 (0)	0 (0)	
Comorbidities	Diabetic	4 (12.5)	14 (43.8)	14 (43.8)	0.368 (0.832)

	Non-Diabetic	55 (14.9)	142 (38.6)	171 (46.5)	
HIV status	Positive	4 (17.4)	6 (26.1)	13 (56.5)	1.715 (0.424)
	Negative	55 (14.6)	150 (39.8)	172 (45.6)	

(*<0.05 significance is obtained by Fisher exact tests)

Among the 400 study participants, the educational level ($\chi^2 = 26.518$, $p = 0.003$) and family type ($\chi^2 = 15.455$, $p = 0.008$) were significantly associated with practice levels. Participants with primary education had the highest proportion of good practices (57.8%), while graduates had the lowest (34.8%). Family type also influenced practice levels, with nuclear family members having the lowest proportion of good practices (42.8%) compared to joint family members (50.3%). Other socio-demographic factors, including age ($\chi^2 = 1.515$, $p = 0.824$), gender ($\chi^2 = 1.358$, $p = 0.507$), occupation ($\chi^2 = 1.237$, $p = 0.539$), marital status ($\chi^2 = 13.034$, $p = 0.066$), socio-economic status ($\chi^2 = 13.931$, $p = 0.084$), and comorbidities ($\chi^2 = 0.368$, $p = 0.832$), did not show statistically significant associations with practice levels.

DISCUSSION

SECTION – I: SOCIO-DEMOGRAPHIC VARIABLES

Table 1: Distribution of the participants according to their age group (n=400)

In the present study, the majority of participants (56.8%) were in the 18-40 years age group, indicating that tuberculosis disproportionately affects individuals in their most productive years. This was followed by 37.3% of participants in the 40-60 years age group, while only 6% of cases were observed among those aged 60 years and above.

The observed age distribution aligns with global tuberculosis trends, where working-age populations are at the highest risk of infection. A comprehensive analysis of tuberculosis incidence in China (2006–2020) by Chen Jinou et al reported two distinct peaks in disease occurrence: one among young adults (20-24 years) and another among older adults (65-69 years), highlighting the dual vulnerability of these age groups.[45] Similarly, a pooled analysis in 2022 by Peer V. et al from seven high-income countries found that men aged 15-44 years had the highest tuberculosis incidence rates, reinforcing that tuberculosis disproportionately impacts economically active populations.[46]

Table 2: Distribution of the participants according to their gender (n=400)

In the present study, 68.5% of the participants were males, while 31.5% were females, highlighting a significant gender disparity in tuberculosis burden. This trend is well-recognized in global tuberculosis epidemiology, where men consistently exhibit higher TB incidence and prevalence compared to women.

Similarly, a systematic review and meta-analysis done by Horton et al in 2016 reported a male-to-female ratio of 2.21 for bacteriologically confirmed TB(95% CI 1.92–2.54;

range 0.62 to 6.18) and 2.51 for smear-positive TB (95% CI 2.07–3.04; range 0.25 to 5.91), emphasizing that men are disproportionately affected by the disease.[47]

Table 3: Distribution of the participants according to their Employment status (n=400)

In the present study, 60.8% of the participants were unemployed, while 39.3% were employed, indicating a significant impact of tuberculosis on economic stability.

This finding is consistent with previous research highlighting the economic burden of TB. A study done by Rajeswari et al in 2009 examining the socio-economic impact of TB in India found that patients experienced an average wage loss of three months, significantly affecting household income.[48] Another study by Meghji et al in 2021 suggested that even after completing treatment, many TB-affected households struggle to regain financial stability, with long-term disruptions in income and employment.[49]

Table 4: Distribution of the participants according to their educational status (n=400)

In this study, 36% participants had completed high school, while 20.8% had finished pre-university courses (PUC), and 25% completed ITI/Diploma qualifications. A small proportion (5.8%) had attained graduation-level education, whereas only 1.3% were illiterates.

Although education is expected to enhance awareness about health and diseases, it does not necessarily translate into better health-seeking behaviours. A systematic review by Chauhan et al in 2024 on health literacy among TB patients reported that even among educated individuals, more than 50% patients struggled with understanding TB-related health information, which affected treatment adherence.[50] Similarly, a study conducted in Colombia in 2022 found that most TB-related deaths occurred among individuals with only primary education, reinforcing that education alone does not mitigate TB risk if health literacy remains low.[51]

Table 5: Distribution of the participants according to their marital status (n=400)

In this study, 74.3% of the participants were married, while 18.8% were unmarried, and 7.1% were widowed/separated.

Table 6: Distribution of the participants according to their pregnancy status (n=400)

In this study, among the 126 female participants, 125(99.2%) female participants were not pregnant and only 1 (0.8%) participant was pregnant.

Table 7: Distribution of the participants according to their religion (n=400)

In this study, the distribution of participants by religion was as follows: 86% Hindu, 13% Muslim, and 1% Christian.

Table 8: Distribution of the participants according to their category (n=400)

In this study, the distribution of participants by caste was as follows: 60% General category, 15% Scheduled Tribes (ST), 13.75% Scheduled Castes (SC), and 11.25% Other Backward Classes (OBC). This distribution reflects the diverse social stratification present in India.

Table 9: Distribution of the participants according to their family type (n=400)

In this study, nearly half of the participants (49.3%) lived in joint families, while 46.8% resided in nuclear families. A smaller proportion (3.3%) belonged to broken families, and 0.8% reported having problem families.

Table 10: Distribution of the participants according to their socio-economic status (n=400)

Among the 400 participants, the majority (83.75%) belonged to Class III, Class IV, and Class V SES categories, indicating a predominance of lower socio-economic groups in the study population. This suggests a strong association between low socio-economic status and health vulnerabilities, including increased susceptibility to tuberculosis (TB).

Similar findings were reported in a study conducted in Karnataka, India (2022) by Shastri et al, which assessed the socio-economic distribution of TB patients among 1,500 participants. The study found that nearly 80% of TB patients belonged to Class III, IV, and V categories (OR: 2.50; 95% CI: 1.80–3.40; $p < 0.001$), emphasizing the disproportionate burden of TB among economically disadvantaged groups.[52]

Table 11: Distribution of the participants according to their card status (n=400)

In the current study, 99% of participants possessed an Aadhar Card, while 84.5% held a ration card.

Table 12: Distribution of the participants according to their card status (n=400)

In the current study, a majority of the study participants (94%) had a bank account, while 24 (6%) participants did not have a bank account.

Table 13: Distribution of the participants according to their type of TB (n=400)

In the current study, the predominance of pulmonary tuberculosis (PTB) at 59.3% aligns with global and national trends, as PTB remains the most common form of tuberculosis due to its airborne transmission and high infectivity. Studies conducted in India and other high-

burden TB countries have consistently reported PTB as the dominant presentation, ranging from 55% to 75% of cases, depending on regional epidemiology and healthcare accessibility.[53] However, the higher proportion of extrapulmonary tuberculosis (EPTB) cases (40.5%) in this study is noteworthy, as EPTB is generally reported in 15–30% of cases in the general population but can be higher in immunocompromised individuals, particularly those with HIV or diabetes.[54]

The low prevalence of MDR-TB (0.3%) was encouraging, as drug-resistant TB is a major public health concern worldwide. Studies have shown MDR-TB prevalence rates varying between 2% to 5% in newly diagnosed cases and significantly higher in previously treated patients.[2]

Table 14: Distribution of the participants according to their Diabetes status(n=400)

In the current study, among the 400 study participants, 32 (8%) were diabetic, while 368 (92%) were non-diabetic. Diabetes mellitus is a significant risk factor for tuberculosis (TB), tripling the risk of developing active TB. This association is particularly concerning in countries like India, where both diabetes and TB are prevalent.

Table 15: Distribution of the participants according to their HIV status(n=400)

In the current study, the prevalence of HIV among the study participants was 5.8%, which aligns with existing evidence highlighting the strong association between HIV and tuberculosis (TB). HIV infection significantly increases the risk of developing active TB by weakening cell-mediated immunity, leading to higher disease progression and mortality rates.

Table 16: Distribution of study participants based on their registration year (n=400)

In the present study, out of 400 study participants, 133 (33.3%) participants were recruited from those who registered under NTEP in 2021, 133 (33.3%) participants were recruited from those who registered under NTEP in 2022, and 134 (33.4%) participants were recruited from those who registered under NTEP in 2023.

SECTION – II: AWARENESS OF NIKSHAY POSHAN YOJANA (NPY)

Table 17: Assessment of awareness level among TB patients

In the current study, a significant majority (87.3%) exhibited poor awareness of patient support systems, with only 2.4% demonstrating good awareness. This finding is concerning, as inadequate awareness can hinder patients' ability to access essential support services, impacting treatment adherence and outcomes. A study conducted in Ethiopia by Abdo et al in 2024 highlighted that limited knowledge about TB and its treatment was associated with delayed healthcare seeking behaviour. Patients with poor knowledge were 68% less likely to seek timely treatment, with an adjusted odds ratio (AOR) of 0.32 (95% confidence interval [CI]: 0.22–0.46; $p < 0.001$), indicating a strong and statistically significant inverse relationship, emphasizing the critical role of patient education in TB control efforts.[55]

Table 18: Association of socio demographic variables and Awareness of 'Patient support systems'

In the current study, findings revealed significant associations between certain socio-demographic factors and the awareness of tuberculosis (TB) patient support systems. Age, gender, and family type were significantly associated with awareness levels, while other factors such as employment status, education status, marital status, religion, category,

socioeconomic status, and possession of Aadhar card or Ration card did not show significant associations.

Age demonstrated a significant association with awareness levels ($\chi^2 = 16.858$, $p = 0.001$), with older individuals (60+ years) exhibiting a higher proportion of good awareness (8.3%) compared to younger age groups.

Gender also showed a statistically significant association ($\chi^2 = 8.785$, $p = 0.012$), where females (94.4%) had poorer awareness compared to males (83.9%).

Similarly, a nationwide survey in India in 2023 by Ranganath et al uncovered a gender gap in TB awareness, with women having lower awareness levels compared to men. The study also highlighted that younger age (aOR: 1.07, 95% CI: 1.01–1.13) and rural residency (aOR: 1.12, 95% CI: 1.06–1.18) were risk factors for lack of awareness among women.[56]

Family type significantly influenced awareness levels ($\chi^2 = 20.265$, $p = 0.002$). Individuals from broken families (15.4%) had a relatively higher proportion of good awareness compared to those from nuclear (2.1%) and joint families (2.0%). Interestingly also, nuclear families had better awareness than joint families.

A study conducted in Mumbai by Patel et al in 2018 among 650 urban slum residents found that individuals with greater independence in health decision-making had higher TB awareness ($\chi^2 = 12.47$, $p = 0.002$).[57]

On the other hand, employment status, educational status, marital status, religion, category, socioeconomic status, and possession of Aadhar card and Ration card did not show significant associations with awareness levels.

Table 19: Multiple Logistic Regression between Socio-demographic variables and Awareness scores (n=400)

The present study found that age and family type were significantly associated with awareness of patient support systems among tuberculosis (TB) patients. Younger patients, particularly those aged 18–39 years, had an 88.7% lower likelihood of awareness compared to those aged 60 years and above. Similarly, individuals from joint families had a 94.9% lower likelihood of awareness compared to those from problematic family backgrounds.

Table 20: Utilization of patient support system among patients diagnosed with TB (n=400)

The present study found that out of 400 tuberculosis (TB) patients, only 168 (42%) utilized TB patient support systems, while 232 (58%) did not. This low utilization rate indicates potential gaps in awareness, accessibility and perceived benefits of patient support services. Several studies conducted in different parts of India have highlighted similar trends, emphasizing the need for improved awareness and service delivery mechanisms.

A study conducted in Andhra Pradesh (2019) by Begum et al among 86 participants assessed the utilization of the nutritional support scheme among TB patients. The study found that a significant proportion (88%) of patients did not receive the intended benefits, attributing low utilization to a lack of awareness, social stigma, and difficulties in accessing government health services.[10]

Similarly, a study in Bangalore by Rabeensa KT et al in 2022 patients evaluated the utilization of the Nikshay Poshan Yojana (NPY) scheme among 137 TB patients registered in a designated microscopy centre. The study reported that 71.5% of the patients received full or partial incentives throughout their treatment course.[16]

Another cross-sectional study done in New Delhi (2024) by Bakhru D. et al in a DOTS centre attached to a tertiary care hospital assessed 42 patients with drug-sensitive TB. The study revealed that while 92.9% were enrolled in the Nikshay Poshan Yojana (NPY), only 47.5% received the first instalment.[29]

Table 21: Association between socio demographic variables and utilization of 'Patient support systems'

The findings from our study aligns with socio-demographic patterns observed in Indian public health research. The increased utilization among older adults (75% in the 60+ age group, p=0.001) aligns with findings from Kerala's study (n=14 FGDs/IDIs, 2021), which highlighted that community-driven support systems prioritized geriatric TB patients due to their complex healthcare needs and social vulnerabilities.[58]

However, our study contrasts with Karnataka's 2021 cohort analysis (n=1,203), which found no age-based disparities in Nikshay Poshan Yojana (NPY) enrolment, suggesting regional variations in program implementation.[59]

Table 22: Multiple Logistic Regression between Socio-demographic variables and Utilization scores (n=400)

The present study revealed that age, education level, and socio-economic status were significant predictors of the utilization of Patient Support Systems among tuberculosis (TB) patients. Among the 400 participants analyzed, individuals in the younger age groups demonstrated markedly lower utilization of the available support services. Specifically, patients aged 18–40 years had an 84% lower likelihood of utilizing the scheme, while those aged 40–59 years had a 71.6% lower likelihood, when compared to patients aged 60 years and above.

These findings suggest that older TB patients are more engaged with or possibly more in need of the support services offered under the scheme.

Education status emerged as a strong influencing factor. Notably, patients who had attained primary-level education were nearly eight times more likely to utilize the support system than those with graduate-level education. This may point toward targeted outreach or better eligibility communication with individuals who have minimal but sufficient literacy to understand the system and engage with health workers or government processes. It may also reflect higher levels of dependence on public schemes among those with limited education.

Socio-economic status displayed a clear inverse relationship with utilization. Patients from the lowest economic class (Class V) were significantly more likely to benefit from support services. Those from Class I had a 96.8% lower chance, and Class II and III had 60.1% and 71.2% lower chances respectively, indicating that utilization of support services is highest among the economically vulnerable. This is consistent with the objective of TB support systems, which aim to provide financial and nutritional aid to those most in need.

No statistically significant associations were observed with other socio-demographic factors such as gender, employment status, social category, or family structure.

Table 23: Distribution of patients by enrolment in Nikshay Poshan Yojna (n=400)

Current study reveals that out of 400 tuberculosis (TB) patients, 168 (42%) were enrolled in the Nikshay Poshan Yojana (NPY), while 232 (58%) were not enrolled. This indicates that a significant proportion of patients did not receive the support intended by the program.

Similarly, a cross-sectional study was conducted in 2018 among patients registered for TB treatment under DOTS centre in Delhi. There were 119 patients registered for TB treatment from 1st July 2018 to 30th September 2018.[11]

In contrast, a retrospective cohort study analysing national TB program data from 2018 to 2022, encompassing approximately 3.7 million patients across India, found that 71.1% received at least one NPY instalment.[60]

Table 24: Distribution of study participants based on the number of instalments received (n=168).

In the present study, among the 168 participants who received benefits under the Nikshay Poshan Yojana (NPY), the distribution of instalments was as follows: 17 participants (10.1%) received only one instalment, 32 (19%) received two instalments, 49 (29.2%) received three instalments, 43 (25.6%) received four instalments, and 27 (16.1%) received five or more instalments. These findings highlight that a significant proportion of patients did not receive the full complement of nutritional support payments during their treatment course.

Similarly, a mixed methods study conducted in Ballabgarh, Haryana, between 2019 and 2021, involving 251 tuberculosis (TB) patients, reported that 60.6% received at least one NPY instalment, while only 22.3% received all instalments.[60]

Table 25: Distribution of study participants based on the total amount received (INR) under NPY (n=168).

In the present study, among the 168 participants who received benefits under the Nikshay Poshan Yojana (NPY), 35 (19.8%) received a total of ₹1000-2000, 83 (49.4%) received ₹2000-3000, and 50 (29.8%) received more than ₹3000, with a majority (79.2%)

receiving ₹2000 or more. The median amount received under the Nikshay Poshan Yojana (NPY) by the study participants was ₹2,500.

A hospital based descriptive study conducted in Bangalore, Karnataka in 2022, assessed the utilization of NPY among tuberculosis patients registered at a designated microscopy centre. Out of 116 respondents, 83 (71.5%) received full or partial incentives throughout their treatment course, with 61 (71.5%) of these beneficiaries utilizing the incentives for nutritional purposes.[16]

Table 26: Distribution of study participants based on the time taken to receive the first benefit payment (n=168).

In the present study, among the 168 participants who received benefits under the NPY, the time taken to receive the first benefit payment varied. Only 10 participants (6%) received their first payment within 2 months, 57 participants (33.9%) received it between 2 to 4 months, 49 participants (29.2%) within 4 to 6 months, and 52 participants (30.9%) had to wait more than 6 months. More than half of the participants (60.1%) experienced delays extending beyond 4 months, with a median waiting time of 5 months. The median time taken by study participants to receive the first benefit payment under the TB Patient Support Systems was 5 months.

A study conducted in New Delhi, India, involving 42 tuberculosis (TB) patients in 2021, revealed that the median time to receive the first instalment was 4.1 months from the initiation of treatment. This finding aligns with our study, where a substantial proportion of participants faced similar delays in receiving their initial payments.[29]

Similarly, a study in Vadodara, Gujarat, analysed data from 1826 TB patients notified between April and September 2018. The study found that 42.2% had received at least one instalment of the NPY benefit. Among public sector patients, only 7.3% received the first instalment within two months of treatment initiation, with a median time to receipt of 5.2 months.[61]

Table 27: Distribution of study participants based on nutritional support received under the Nikshay Poshan Yojana (NPY) (n=168).

In the present study, among the 168 participants who received benefits under the Nikshay Poshan Yojana (NPY), only 50 individuals (29.8%) reported receiving nutritional support during their tuberculosis (TB) treatment, while a majority, 118 participants (70.2%), did not receive any such support.

Table 28: Distribution of study participants based on the adequacy of financial/nutritional support received (n=168).

In the present study, among the 168 participants who received benefits under the Nikshay Poshan Yojana (NPY), 108 (64.2%) reported that the financial and nutritional support was adequate, while 60 participants (35.8%) felt it was insufficient.

Table 29: Distribution of study participants based on reasons for inadequate support under the Nikshay Poshan Yojana (NPY) (n=60).

In the present study, among the 60 participants who perceived the support from the Nikshay Poshan Yojana (NPY) as inadequate, 57 (95%) cited the insufficiency of the financial incentive as the primary reason, while 3 (5%) pointed to inadequate nutritional support.

Table 30: Distribution of study participants based on the utilization of financial support under the Nikshay Poshan Yojana (NPY) (n=168).

In the present study, among the 168 participants who received financial assistance under the Nikshay Poshan Yojana (NPY), 110 (65.4%) utilized the funds for nutritional purposes, indicating a prioritization of dietary needs during tuberculosis (TB) treatment. However, a significant portion of participants allocated the funds to non-nutritional expenses: 12 (7.1%) for personal needs, 20 (11.9%) for family-related expenses, and 26 (15.4%) for other unspecified purposes.

A similar pattern was observed in the study conducted at designated microscopy centre in Bangalore, where among the TB patients who received incentives, 73% utilized them for nutritional purposes, while 27% directed the funds toward non-nutritional needs such as family and personal expenses.[16]

Table 31: Distribution of study participants based on assistance received in withdrawing financial support under the Nikshay Poshan Yojana (NPY) (n=168).

In the present study, among the 168 participants who received financial assistance under the Nikshay Poshan Yojana (NPY), 120 (71.4%) withdrew the funds themselves, indicating a high level of independence in managing financial transactions. However, 48 participants (28.6%) required assistance: 35 (20.8%) from family members, 8 (4.7%) from neighbours, and 5 (2.9%) from Accredited Social Health Activists (ASHAs).

Table 32: Distribution of patients by Recommendation of Nikshay Poshan Yojna (NPY) by beneficiaries (n=168)

In the present study, 140 (83.4%) of the 168 participants who received benefits under the Nikshay Poshan Yojana (NPY) stated that they would recommend the scheme to other TB patients, while 28 (16.6%) would not.

Table 33: Distribution of study participants based on beneficiary suggestions for improving the Nikshay Poshan Yojana (NPY) (n=168).

In the present study, 168 participants provided feedback on how the Nikshay Poshan Yojana (NPY) could be improved. The most common suggestion, given by 50 participants (37%), was to increase the financial incentives, indicating that the current support may not be sufficient to meet their nutritional and daily needs. Additionally, 30 participants (22.2%) advocated for enhanced nutritional support, suggesting that existing provisions might not be adequate during TB treatment. Another key recommendation was the need for greater awareness about the scheme, as highlighted by 40 participants (29.6%), emphasizing that many TB patients are either unaware of the full benefits or face challenges in accessing them. Furthermore, 15 participants (11.1%) stressed the importance of more frequent follow-ups, underscoring the need for better patient engagement and continuous monitoring to ensure adherence to treatment and timely receipt of financial benefits.

Table 34: Utilization scores of patient support system among TB patients (n=400)

In the present study, out of 400 tuberculosis (TB) patients, a significant majority—256 participants (64.0%)—demonstrated poor utilization of available patient support systems. Only 68 participants (17.0%) exhibited average utilization, and 76 participants (19.0%) reported good utilization of patient support systems.

Table 35: Association of socio demographic variables of participants and utilisation of 'Patient support systems'

In the present study, we observed that various socio-demographic factors influenced the utilization of patient support systems among tuberculosis (TB) patients. Age was a significant determinant, with older adults (≥60 years) exhibiting higher utilization (54.2%) compared to younger individuals aged 18–40 years (11.9%) ($\chi^2 = 28.307$, $p < 0.05$). This finding indicates that older patients may have a greater need for support due to potential comorbidities and socioeconomic challenges.

Educational status also played a crucial role; individuals with primary education demonstrated higher utilization (40.0%), while those with graduation-level education exhibited the lowest engagement (4.3%) ($\chi^2 = 34.900$, $p < 0.05$). This trend suggests that lower educational attainment may be associated with increased reliance on support systems, possibly due to limited health literacy and resources. Similarly, marital status influenced utilization patterns, with widowed (60.0%) and widowered (65.0%) individuals reporting higher engagement, whereas unmarried individuals had the lowest utilization (8.0%) ($\chi^2 = 33.915$, $p < 0.05$).

Family structure further impacted support system utilization; individuals from broken families (38.5%) and those experiencing family problems (33.3%) demonstrated higher reliance on support systems compared to those from nuclear (13.4%) and joint families (22.8%) ($\chi^2 = 36.617$, $p < 0.05$).

Socioeconomic status was another critical factor; individuals from lower socioeconomic classes (Class V: 30.8%) engaged more frequently with support systems, whereas those from Class I exhibited the non-utilization (0%) ($\chi^2 = 30.485$, $p = 0.05$). This

disparity highlights the role of economic constraints in accessing and utilizing healthcare support services. Additionally, ration card status underscored this association, as Below Poverty Line (BPL) cardholders had a higher utilization rate (21.9%) compared to Above Poverty Line (APL) cardholders (3.2%) ($\chi^2 = 22.496$, $p < 0.05$).

The type of TB significantly influenced utilization; patients with pulmonary TB demonstrated higher engagement (24.1%) compared to those with extrapulmonary TB (11.7%) ($\chi^2 = 10.951$, $p = 0.010$). This difference may be attributed to the varying severity and public health implications of different TB forms. Lastly, HIV status was a crucial determinant, with HIV-positive individuals showing significantly higher utilization (43.5%) than HIV-negative individuals (17.5%) ($\chi^2 = 8.841$, $p = 0.009$).

Table 36: Association of awareness level and utilization level among patients (n=400)

In the present study, a statistically significant association was observed between awareness levels and utilization of TB patient support systems (Chi-square = 88.828, p = 0.001) among the 400 participants. Among those with poor awareness, 72.2% had poor utilization of support systems, while only 14% achieved good utilization. In contrast, participants with average awareness demonstrated better outcomes, with 43.9% reporting average utilization and 46.3% reporting good utilization. Notably, among participants with good awareness, none had poor utilization, and a striking 80% demonstrated good utilization.

Graph 31: Scatterplot between Awareness scores and Utilization scores of the participants n=400)

The scatterplot analysis of 400 TB patients demonstrated a clear trend: as awareness scores increased, utilization scores of Patient Support Systems (PSS) also increased. This

relationship was statistically supported by a moderately strong positive correlation (r = 0.559, p = 0.001), which was significant at the 5% level of significance. These results suggest that greater awareness of available support services is closely linked to higher levels of service utilization among patients.

The mean awareness score was 1.12 (SD = 2.50), while the mean utilization score was 3.90 (SD = 3.75), indicating a considerable variability in how well patients knew about and accessed the available schemes. Despite this variability, the positive direction of the correlation highlights that awareness plays a crucial role in driving engagement with support systems.

Table 37: TB treatment outcome among patients (n=400)

In the present study, out of 400 tuberculosis (TB) patients, we observed a cure rate of 24.8%, with 64.8% completing treatment, and a treatment failure rate of 10.4%. There were no reported cases of mortality, loss to follow-up, or patient transfers during the study period because these patients were not included in the study.

Similarly, a multicentric prospective cohort study done in India in 2024 involving 2,006 individuals with drug-susceptible TB found that 18% experienced unfavourable treatment outcomes, including treatment failure (4.7%), recurrent infection (2.5%), death (4.1%), and loss to follow-up (6.8%).[62]

Table 38: Association of awareness levels and TB treatment outcomes among patients (n=400)

In the present study, the association between awareness levels and TB treatment outcomes among 400 participants was analysed. Among those with poor awareness, 93 (26.6%) were cured, 223 (63.9%) completed treatment, and 33 (9.5%) experienced treatment failure. In contrast, the average awareness group showed a lower cure rate (12.2%) and a higher treatment failure rate (19.5%), while the good awareness group had 10% cure and 10% treatment failure, with 80% completing treatment. Despite these variations, the association between awareness and treatment outcome was not statistically significant (Chi-square = 8.012, p = 0.091).

Table 39: Association of utilization levels and TB treatment outcomes among patients (n=400)

In the current study, the analysis of utilization levels of Patient Support Systems revealed a statistically significant association with TB treatment outcomes (Chi-square = 15.24, p = 0.004). Participants with poor utilization had a cure rate of 28.9%, treatment completion rate of 62.5%, and treatment failure rate of 8.6%. The average utilization group demonstrated the highest treatment completion rate (77.9%) and the lowest failure rate (7.4%), while the good utilization group had a comparatively higher treatment failure rate (19.7%), despite also showing a higher cure rate (19.7%).

Table 40: Attitudes Towards TB, its Treatment, and NTEP Services (n=400)

In the present study, participant's attitudes toward tuberculosis, its treatment, and services under the National Tuberculosis Elimination Programme (NTEP) were assessed. Regarding awareness of TB's long-term consequences, only 48.8% of participants reported that they were informed of TB's long term effects, while 51.2% had not received any such

information. Similarly, while 57% had received guidance on preventing TB transmission, a significant 43% had not.

In terms of attitudes towards treatment, 77% of participants reported an improvement in symptoms, suggesting a generally positive perception of the effectiveness of anti-TB therapy. However, only 52% of participants were informed about the importance of completing the full course of treatment. This gap in communication may contribute to poor adherence and the risk of treatment default or drug resistance.

Attitudes toward services under NTEP revealed that 38.5% of participants remained neutral, while 24.5% expressed dissatisfaction (combining “very dissatisfied” and “dissatisfied”). On the other hand, 37% expressed satisfaction (combining “satisfied” and “very satisfied”), indicating that while many beneficiaries acknowledge the value of services, a substantial proportion are unsatisfied.

Further, when asked about increasing awareness of the Nikshay Poshan Yojana, 41.7% strongly agreed and 27.8% agreed, showing that nearly 70% of participants supported the need for enhanced communication regarding the scheme. This highlights a strong patient-driven demand for improved awareness initiatives.

Table 41: Assessment of Attitude of TB patients

In the present study, the assessment of attitude scores among 400 TB patients revealed that 22.5% exhibited a poor attitude, 68.5% had an average attitude, and only 9% demonstrated a good attitude towards TB patient support systems.

Table 42: Association between Socio-demographic variables and Attitude towards 'Patient Support Systems' among patients diagnosed with Tuberculosis

The study revealed that older adults (≥60 years) had the most positive attitudes toward TB patient support systems, with 83.3% classified in the average category, whereas younger participants (18–40 years) exhibited the highest proportion of poor attitudes (25.1%).

Despite these variations in attitude, no significant association was observed between gender ($\chi^2 = 0.373$, $p = 0.830$), education ($\chi^2 = 3.717$, $p = 0.961$), or occupation ($\chi^2 = 2.264$, $p = 0.322$) with attitude levels.

Additionally, clinical factors such as type of TB ($\chi^2 = 4.607$, $p = 0.363$), diabetes ($\chi^2 = 0.724$, $p = 0.696$), and HIV status ($\chi^2 = 0.390$, $p = 0.823$) did not show significant associations with attitude levels.

Table 43: Practices related to TB Medication, Monitoring, and Support

Among 400 study participants, 182 (45.5%) experienced medication side effects, while 218 (54.5%) did not. A majority, 339 (84.7%), adhered to the prescribed TB treatment regimen, whereas 61 (15.3%) did not. Additionally, 93 (23.3%) reported missing TB medication doses, while 307 (76.7%) maintained consistent adherence.

Regarding monitoring and testing, 358 (89.5%) underwent a sputum test for treatment monitoring, while 42 (10.5%) did not. After treatment completion, 385 (96.2%) had a follow-up test, whereas 15 (3.8%) did not.

In terms of daily activities and support, 99 (24.8%) participants continued their daily activities during treatment, whereas 301 (75.2%) did not. Only 5 (1.3%) received

additional support or counselling, while the majority, 395 (98.7%), did not. Finally, 383 (95.7%) successfully completed their full TB treatment, while 17 (4.3%) did not.

Table 44: Assessment of practice level among TB patients (n=400)

In the present study, a significant proportion of the study participants (46.3%) exhibited good practice levels concerning TB patient support systems, while 39% had average practices, and 14.8% demonstrated poor practices.

Table 45: Association between Socio-demographic variables of the participants and Practice level of 'Patient support systems' among patients diagnosed with Tuberculosis (n=400)

In the present study, findings indicate that educational level ($\chi^2 = 26.518$, $p = 0.003$) and family type ($\chi^2 = 15.455$, $p = 0.008$) significantly influenced the practice levels of TB patients regarding the utilization of patient support systems. Participants with primary education demonstrated the highest proportion of good practices (57.8%), while those with graduate-level education had the lowest (34.8%). This could be attributed to the fact that individuals with lower educational backgrounds may have greater exposure to community-based health initiatives, which emphasize compliance with treatment and support systems.

Family structure also played a crucial role in influencing TB patient support practices. Participants from nuclear families had the lowest proportion of good practices (42.8%), while those from joint families showed better engagement (50.3%). Family support is a key factor in ensuring adherence to treatment regimens and the utilization of financial and nutritional assistance programs under schemes like Nikshay Poshan Yojana.

Socio-demographic factors such as age ($\chi^2 = 1.515$, $p = 0.824$), gender ($\chi^2 = 1.358$, $p = 0.507$), occupation ($\chi^2 = 1.237$, $p = 0.539$), and socio-economic status ($\chi^2 = 13.931$, $p = 0.084$) did not show statistically significant associations with practice levels.

CONCLUSION

- Eight out of ten participants had poor awareness regarding Patient Support Systems, while only a small fraction demonstrated good awareness.
- Less than half of the participants reported having utilized the available support systems during their TB treatment.
- Increasing age, higher educational attainment, and being part of joint or broken families were associated with better awareness of Patient Support Systems. Similarly, older age, primary-level education, lower socio-economic status, and possession of a BPL ration card were associated with higher utilization of these systems.
- Gender, occupation, marital status, type of tuberculosis, and presence of comorbidities such as HIV or diabetes were not found to be significantly associated with awareness or utilization of Patient Support Systems.
- Most of the participants had favourable treatment outcomes. Utilization of Patient Support Systems was associated with better treatment completion and recovery rates. Those who were aware of and had utilized the support systems were more likely to achieve successful treatment outcomes compared to those who did not.

RECOMMENDATIONS

To Individuals:

- Individuals should adhere strictly to anti-TB treatment schedules, attend follow-up appointments, and maintain a healthy lifestyle to enhance recovery.
- Patients should utilize the financial assistance specifically for improving nutrition, as poor nutritional status adversely affects treatment outcomes.
- TB patients should actively seek information about government support schemes such as the *Nikshay Poshan Yojana* (NPY) and ensure timely registration to receive the entitled benefits.
- Patients should discuss their needs openly with healthcare providers, especially if they face issues related to transportation, delayed DBT, or other challenges in accessing support services.

To Families:

- Family members should motivate TB patients to complete their full course of treatment and support them in attending regular follow-ups and diagnostic testing.
- Families should assist patients in utilizing government schemes by helping with bank account access, Aadhaar updates, and scheme-related documentation.
- Emotional and social support from family members plays a crucial role in reducing stigma and improving treatment adherence—families must provide a supportive and non-judgmental environment for the patient.

To Community:

- Community leaders and NGOs should conduct awareness drives about *Patient Support Systems (PSS)* under NTEP, especially in urban slum areas where utilization is low.
- Community health volunteers, ASHAs, and Anganwadi workers should be trained and engaged in educating TB patients about NPY, helping them with registration and withdrawal of benefits.
- Local self-help groups, religious institutions, and resident welfare associations can collaborate to reduce stigma and promote community-based rehabilitation and support for TB patients.

To Health System:

- The District TB Centre should ensure that all registered patients are promptly enrolled in *Nikshay* and receive financial benefits without delay. A tracking mechanism should be developed to monitor payment timelines.
- Health staff at Urban PHCs should conduct monthly counselling sessions and nutritional education for TB patients, especially targeting those with poor awareness and utilization scores.
- Block-level health education officers should implement targeted *Information, Education, and Communication (IEC)* campaigns to spread awareness about PSS, nutritional needs, and treatment adherence.
- Regular staff training programs should be conducted for medical officers, TB health visitors, and community workers to enhance knowledge on scheme guidelines, implementation challenges, and patient communication.

- A grievance redressal mechanism should be established for patients facing issues in scheme disbursement or awareness gaps.

To Policy Makers:

- The State Government should revise and increase the monthly financial assistance under NPY to reflect rising living and food costs (linked to inflation).
- Government should develop integrated support packages that combine financial aid, nutritional kits, and travel support to ensure a holistic patient support approach.
- Policies must focus on faster DBT disbursement systems by integrating Aadhaar verification, direct account linkage, and automated processing with banks.
- Allocation of additional budgetary support is essential for patient-centric TB care, including digital tracking of scheme utilization and real-time monitoring via *Nikshay* portal.
- Coordination between central, state, and district health authorities should be strengthened to ensure uniform implementation and timely release of funds.

STRENGTHS

1. Comprehensive Evaluation: This study explored both awareness and utilization of TB support systems, providing a holistic view of patient experiences.
2. Real-World Application: Unlike controlled settings, this study analyzed the practical implementation of DBT schemes in routine healthcare, making its findings more relevant for policy decisions.
3. Focus on Utilization Patterns: The study went beyond simple receipt of benefits and examined whether patients used the financial aid for its intended nutritional purpose, providing deeper insights into program effectiveness.
4. Assessment of Health Outcomes: The study focused on financial support and utilization and also measured the direct impact of these support systems on TB treatment outcomes, such as adherence or recovery rates.

LIMITATIONS

1. Sampling Constraints: The study was conducted only in selected urban and peri-urban areas, which limits the generalizability of findings to rural populations, where access to healthcare and awareness levels may differ significantly.

2. Self-Reported Data: Information related to awareness and utilization of financial benefits under Patient Support Systems (PSS) was collected through self-reporting, making it susceptible to recall bias and social desirability bias.

3. Delayed Benefit Distribution: Although the study identified significant delays in the disbursement of Nikshay Poshan Yojana (NPY) funds, it lacked a mechanism to quantitatively assess the impact of these delays on treatment adherence.

4. Exclusion of Qualitative Insights: The study design did not include a qualitative component to explore in-depth reasons for the non-utilization of available support systems, which may have provided richer context and understanding.

SUMMARY

A facility-based, cross-sectional descriptive study was conducted among 400 TB patients registered under the National Tuberculosis Elimination Programme (NTEP) in the urban Tuberculosis Unit of Belagavi district, Karnataka, from 1st January 2021 to 31st December 2023 (3 years). Participants were selected using systematic random sampling with proportionate allocation from the registration records. Data was collected through in-person interviews using a pre-designed, pre-tested, and validated questionnaire. Ethical clearance was obtained from the Institutional Ethics Committee for Human Subjects Research of the Medical college and written informed consent was obtained from all study participants.

Collected data was entered into Microsoft Excel and analyzed using SPSS version 20. Descriptive statistics such as frequency, percentage, mean, and standard deviation were calculated, and associations between variables were analyzed using Chi-square tests. Cut-off scores based on mean and standard deviation were used to categorize awareness and utilization levels of Patient Support Systems (PSS) as poor, average, or good.

Among the 400 participants, 56.8% belonged to the 18–40 years age group, 68.5% were males, and 60.8% were unemployed. 36% had completed high school education, and 74.3% were married. A majority of participants (86%) were Hindu by religion and 60% belonged to the General category. Joint families (49.3%) and lower socio-economic status (67.5% belonged to Class IV or V) were predominant.

Regarding awareness of PSS, 87.3% participants had poor awareness, 10.3% had average, and only 2.4% had good awareness. Awareness was significantly associated with age ($p=0.001$), gender ($p=0.012$), and family type ($p=0.002$). Older participants (60+ years), males, and individuals from broken families had better awareness compared to others.

Only 42% of the participants utilized the patient support systems. Utilization was significantly associated with age (p=0.001), education (p=0.0001), marital status (p=0.002), family type (p=0.001), socio-economic status (p=0.0001), ration card status (p=0.001), and type of TB (p=0.044). Participants aged 60+ years had the highest utilization (75%), while those aged 18–30 years had the lowest (34.4%). Participants from broken families and those with BPL ration cards also showed higher utilization.

Only 168 (42%) participants were enrolled in the Nikshay Poshan Yojana (NPY). Of them, 79.2% received more than INR 2000, but 60.1% experienced delays beyond 4 months in receiving the first instalment. Only 29.8% received nutritional support. Among those who felt the support was inadequate, 95% cited insufficient financial incentives. Despite these issues, 83.4% of NPY beneficiaries said they would recommend the scheme to others.

Regarding fund utilization, 65.5% of participants used the amount for nutrition, while others used it for personal or family needs. Majority (71.4%) withdrew the funds independently, while 20.8% received help from family members.

Overall, 64% of participants showed poor utilization of the Patient Support Systems, 17% had average, and only 19% had good utilization. These findings emphasize the gaps in awareness and timely delivery of support systems, and underline the need for targeted IEC campaigns, better system integration, and monitoring to improve uptake and effectiveness of Patient Support Services under NTEP.

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ANNEXURE – I

K.L.E. ACADEMY OF HIGHER EDUCATION AND RESEARCH
(Deemed - to-be- University)
Accredited 'A+' Grade by NAAC in (3rd Cycle) Placed in Category 'A' by MHRD (GoI)
JNMC INSTITUTIONAL ETHICS COMMITTEE
JAWAHARLAL NEHRU MEDICAL COLLEGE,
NEHRU NAGAR, BELAGAVI-590010 (KARNATAKA-INDIA)
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Ref No.MDC/JNMCIEC/ 48 · **Date: 01/04/2023**

To,
BD0122002
PG Student in Community Medicine
J. N. Medical College,
BELAGAVI.

Sub: Institutional Ethical Clearance for the study.

With reference to the above, we wish to inform you that your proposed research project titled **"AWARENESS AND UTILISATION OF 'PATIENT SUPPORT SYSTEMS' AMONG PATIENTS DIAGNOSED WITH TUBERCULOSIS IN AN URBAN AREA: A DESCRIPTIVE STUDY",** is ethical and justifiable. The proposed research project has been cleared by the JNMC Institutional Ethics Committee.

(Dr. Smita Sonoli)
Member Secretary
JNMC Institutional Ethics Committee
J.N.Medical College, Belagavi.

(Dr. Harsha Hegde)
Chairman,
JNMC Institutional Ethics Committee
J.N.Medical College, Belagav

ANNEXURE – II

INFORMED CONSENT FORM

"AWARENESS AND UTILISATION OF PATIENT SUPPORT SYSTEMS AMONG PATIENTS DIAGNOSED WITH TUBERCULOSIS IN URBAN AREA: A DESCRIPTIVE STUDY. "

Introduction:

Tuberculosis (TB) is a major public health problem worldwide and it is the leading cause of death in India. Patient support systems (PSS) are essential in improving the outcomes of TB patients by providing incentives, nutrition support, and links to other social welfare programs during the treatment period. The results of this study will be used to identify awareness utilisation and potential barriers to patient support system, among TB patients in India.

Explanation of procedure:

In this study, you will have to answer a few questions about your Socio Demographic details and some questions on awareness and utilisation of patient support systems for Tuberculosis. The entire procedure may take 10-20 minutes. If you agree to participate, the required information will be collected.

Withdrawal from participation in the study:

Participation in this study is voluntary. You will be free to decide whether to participate in this study or continue participation once enrolled. In case you decide to withdraw your participation, you are free to do so. However, please convey the decision to the principal investigator.

Possible benefits from participating in the study:

You will not get any benefits by participating in this study. The data gathered will help the population at large and in improving the National TB Elimination Programme and future patients with TB on treatment.

Possible risks from participating in the study:

There are no risks involved in participating in this study.

Privacy and confidentiality: The information collected from you will be coded, to prevent any person from identifying you. Your personal identity will never be revealed. The data collected from you will be kept confidential and only processed or aggregated data will be used for publication/ presentation.

Financial incentives: You will not receive any payment for participating in this study.

Cost of investigations Not applicable, all the cost of the study will be borne by the investigator.

Authorization for publication of aggregated data: Results obtained after processing of the aggregated data will be published for scientific purposes and or presented to scientific groups. However, your personal identity will never be revealed.

Legal rights: By signing this consent form, we are not waiving off any of your legal rights

CONSENT STATEMENT

"I am making a voluntary decision to participate in the study "Awareness and Utilisation of patient support systems among tuberculosis patients in Belagavi urban". My signature below indicates that I have decided to participate and I have read the information provided above or the information provided above has been read to me in the language that I understand best. I was given the opportunity to ask questions and that they have been answered to my satisfaction."

Name of the participant:_____

Signature or left thumb impression of the participant:_____

Name of the witness:_____

Signature or left thumb impression of the witness: _____

Name of the investigator:_____

Signature of the investigator:_____

Date:_____ Place:_____

ANNEXURE – III

PROFORMA / QUESTIONNAIRE

KAHER

JNMC, Belagavi

Department of Community Medicine

Research Questionnaire: "Awareness and Utilisation of 'Patient Support Systems' among patients diagnosed with Tuberculosis in Urban Area: A Descriptive Study"

Note: All the data collected will be kept confidential. Your personal identity will never be revealed.

Serial No. …….. **Date of interview:**.....

Mobile number:..... **NTEP Treatment starting date:**.....

SECTION- I : SOCIODEMOGRAPHIC DETAILS

1.1 Name of the participant:.....

1.2 Age:.....years

1.3 Gender: Male/Female

1.4 Address:.....

1.5 Occupation: Employed/ Unemployed/Housewife/Student/Retired

1.6 Education status: Illiterate/ Primary/ High school/ PUC/ ITI or Diploma/ Graduation

1.7 Marital status: Married/ Unmarried/ Widow/ Widower/ Divorcee

1.8 Pregnant: Yes/ No/ Not Applicable

1.9 Religion:Hindu/Muslim/Christian/Others specify……

1.10 Category:..... GEN/ST/SC/OBC/Others

1.11 Family type: Nuclear/ Joint/ Broken/ Problem

1.12 Total Income of the family per month: Rs……

1.13 Socio economic status (as per modified BG Prasad's classification):

Class- I / II / III / IV / V

1.14 Possession of ration card: APL/ BPL/ No Ration Card

1.15 Do you have an Aadhaar card? Yes/No

1.16 Do you have a bank account? Yes/No

1.17 Type of TB: Pulmonary/Extrapulmonary/MDR/XDR

1.18 Comorbidities…….

1.19 HIV status……..

NIKSHAY POSHAN YOJANA

Section-II

AWARENESS

2.1 Are you aware about the 'Nikshay Poshan Yojna'? Yes/No

2.2 Are you aware that Nikshay Poshan Yojna is a government scheme for TB patients? Yes/No

2.3 Do you know which documents are required for enrollment in NPY? Yes/No

2.4 If yes, do you know a savings bank account is required for enrollment? Yes/No

2.5 If yes, do you know aadhar card is required? Yes/No

2.6 If yes, Do you know BPL card is required? Yes/No

2.7 Do you know that if you stop taking medication, you won't receive any assistance? Yes/No

2.8 If you have not received any benefit, have you ever tracked the status of your Nikshay Poshan Yojna application? Yes/No

2.9 2.10 Do you know how much money you get if you get enrolled? Yes/No

2.11 If yes, do you know how much amount you get as the first instalment? Yes/No

2.12 If yes, how much money do you get as the second instalment? Yes/No

2.13 If yes, do you know how much money you get after completing the treatment course? Yes/No

2.14 How did you hear about the NPY scheme? HCW/ Nikshay Mitra/ Family/ Friends/ Relatives

Section-III

UTILISATION

3.1 Have you enrolled in the Nikshay Poshan Yojna for TB treatment? Yes/No

3.2 When did you register under NTEP? Date:.....

3.3 When did you enrol under NPY? Date:.....

3.4 When did you receive your first benefit payment from NPY? Date:.....

3.5 When did you receive your second benefit payment? Date:.....

3.6 When did you receive your third benefit payment? Date:.....

3.7 Did you receive any nutritional support through the 'Nikshay Poshan Yojna' during your TB treatment? Yes/No

3.8 If yes, specify… … … .

3.9 Did you receive any financial support through the NPYduring your treatment?

3.10 If yes, amount for 1st instalment ……

Amount for 2nd instalment… … … .

Amount for 3rd instalment… … … ..

3.11 Was the 'financial/Nutritional support' received adequate for your needs? Yes/No

3.12 If the support was not adequate, reasons……

3.13 Where did you spend the money which you got from the scheme? Nutrition/ personal needs/ family fulfilment/ other specify……..

3.14 Who helped you in withdrawing money from your bank account, self/ ASHA worker / family/ friends/Neighbors?

3.15 Would you recommend the 'Nikshay Poshan Yojna' to other TB patients for support during treatment? Yes/No

3.16 How do you think the government can improve this service?

specify……..

Section IV:

TB Treatment outcomes

4.1 Cured Y/N

4.2 Treatment Completed Y/N

4.3 Died Y/N

4.4 Lost to follow up Y/N

4.5 Treatment Failure Y/N

4.6 Transferred out Y/N

4.7 Any other, specify……..

Section -V

ATTITUDE

5.1 How satisfied are you with the services you received under the scheme? 1/2/3/4/5

5.2 Have you experienced any side effects from the medication? Yes/No

5.3 Have you been adhering to your treatment regimen as prescribed? Yes/No

5.4 Have you missed any doses of TB medication? Yes/No

5.5 Have you had any sputum tests to monitor your progress?Yes/No

5.6 Have you noticed any improvement in your symptoms since starting treatment?Yes/No

5.7 Have you been able to continue with your daily activities while undergoing treatment?Yes/No

5.8 Have you received any additional support or counselling during treatment?Yes/No

If yes, specify… … … .

5.9 Have you been informed of the potential long-term effects of TB? Yes/No

5.10 Have you been given information on preventing the spread of TB to others?Yes/No

5.11 Have you been informed of the importance of completing the full course of treatment?Yes/No

5.12 Have you completed your TB treatment regimen?Yes/No

5.13 If you have completed your treatment, have you had any follow-up sputum tests to confirm that you are TB-free? Yes/No

5.14 Do you think that awareness about Nikshay Poshan Yojna should be increased among TB patients? 1/2/3/4/5

-Thank you for your kind cooperation -

ANNEXURE – IV

KEY TO MASTER CHART

Section I: Sociodemographic Details

Question	Responses	Code
1.1 Serial No		
1.2 Age	18-40	1
	40-60	2
	60+	3
1.3 Gender	Male	1
	Female	2
1.5 Employment status	Employed	1
	Unemployed	2
	Housewife	3
	Student	4
	Retired	5
1.6 Education Status	Illiterate	1
	Primary	2
	High school	3
	PUC	4
	ITI/Diploma	5
	Graduation	6
1.7 Marital Status	Married	1
	Unmarried	2
	Widow	3
	Widower	4

	Divorcee	5
1.8 Pregnant	Yes	1
	No	2
	Not Applicable	3
1.9 Religion	Hindu	1
	Muslim	2
	Christian	3
	Others	4
1.10 Category	GEN	1
	ST	2
	SC	3
	OBC	4
	Others	5
1.11 Family type	Nuclear	1
	Joint	2
	Broken	3
	Problem	4
1.13 Socio-economic Status (BG Prasad's classification)	Class I	1
	Class II	2
	Class III	3
	Class IV	4
	Class V	5
1.14 Possession of Ration Card	APL	1
	BPL	2
	No Ration Card	3
1.15 Aadhaar Card	Yes	1
	No	2

1.16 Bank Account	Yes	1
	No	2
1.17 Type of TB	Pulmonary	1
	Extrapulmonary	2
	MDR	3
	XDR	4
1.18 Comorbidities	Diabetic	1
	Non-Diabetic	2
1.19 HIV Status	Positive	1
	Negative	2

Section II: Awareness

Question	**Responses**	**Code**
2.1 Are you aware about the 'Nikshay Poshan Yojna'?	Yes	1
	No	2
2.2 Is it a government scheme for TB patients?	Yes	1
	No	2
2.3 Do you know which documents are required?	Yes	1
	No	2
2.4 Is a savings bank account required for enrollment?	Yes	1
	No	2
2.5 Is an Aadhaar card required?	Yes	1
	No	2
2.6 Is a BPL card required?	Yes	1
	No	2
2.7 If you stop taking medication, will you not receive assistance?	Yes	1
	No	2

2.8 Have you tracked the NPY application status?	Yes	1
	No	2
2.9 Do you know how much money you get if enrolled?	Yes	1
	No	2
2.10 First instalment amount	Yes	1
	No	2
2.11 Second instalment amount	Yes	1
	No	2
2.12 Amount after completing treatment	Yes	1
	No	2
2.13 How did you hear about the NPY scheme?	HCW	1
	Nikshay Mitra	2
	Family	3
	Friends	4
	Relatives	5
	NA	6

Section III: Utilisation

Question	**Responses**	**Code**
3.1 Enrolled in NPY?	Yes	1
	No	2
3.2 Date of NTEP registration	2021	1
	2022	2
	2023	3
3.3 Date of NPY enrolment	2021	1
	2022	2
	2023	3

	NA	4
3.4 First benefit payment received	2021	1
	2022	2
	2023	3
	NA	4
3.5 Second benefit payment received	2021	1
	2022	2
	2023	3
	NA	4
3.6 Third benefit payment received	2021	1
	2022	2
	2023	3
	NA	4
3.7 Received nutritional support?	Yes	1
	No	2
3.8 If yes, specify nutritional support (Protein powder)	Yes	1
	No	2
3.9 Received financial support?	Yes	1
	No	2
3.10 First installment	No amount received	1
	Rs 500 received	2
	Rs 1000 received	3
Second installment	No amount received	1
	Rs 500 received	2
	Rs 1000 received	3
Third installment	No amount received	1
	Rs 500 received	2

	Rs 1000 received	3
3.11 Was support adequate?	Yes	1
	No	2
3.12 Reasons why support was not adequate	NA	1
	Less incentive	2
	Less nutrition	3
3.13 How did you spend the money?	Nutrition	1
	Personal needs	2
	Family fulfilment	3
	Other	4
	NA	5
3.14 Who helped withdraw money?	Self	1
	ASHA worker	2
	Family	3
	Friends	4
	Neighbors	5
	NA	6
3.15 Would you recommend NPY to others?	Yes	1
	No	2
3.16 How do you think the govt can improve this service?	Better incentives	1
	More follow ups	2
	More nutrition support	3
	More awareness	4
	NA	5

Section IV: TB Treatment Outcomes

Question	Responses	Code
4.1 Cured	Cured	1
	Treatment completed	2
	Died	3
	Lost to follow-up	4
	Treatment failure	5
	Transferred out	6
	Others	7

Section V: Attitude

	Question	Responses	Code
Attitude towards TB	5.1 Informed of long-term TB effects?	Yes	1
		No	2
	5.2 Informed on preventing TB spread?	Yes	1
		No	2
Attitude towards treatment	6.1 Noticed improvement?	Yes	1
		No	2
	6.2 Informed about completing treatment?	Yes	1
		No	2
Attitude towards services under NTEP	7.1 Satisfaction with services	1 (Very Dissatisfied)	1
		2 (Dissatisfied)	2
		3 (Neutral)	3
		4 (Satisfied)	4

		5 (Very Satisfied)	5
	7.2 Should awareness of NPY be increased?	1 (Strongly Disagree)	1
		2 (Disagree)	2
		3 (Neutral)	3
		4 (Agree)	4
		5 (Strongly Agree)	5
	Question	**Responses**	**Code**
PRACTICE: Medication Adherence and Management	8.1 Experienced side effects?	Yes	1
		No	2
	8.2 Adhering to treatment?	Yes	1
		No	2
	8.3 Missed any doses?	Yes	1
		No	2
PRACTICE: Monitoring and Testing	9.1 Had sputum tests?	Yes	1
		No	2
	9.2 Follow-up sputum test post-treatment?	Yes	1
		No	2
PRACTICE: Daily Activities and Support	10.1 Able to continue daily activities?	Yes	1
		No	2
	10.2 Received additional support or counselling?	Yes	1
		No	2
	10.3 Completed treatment?	Yes	1
		No	2

ANNEXURE – V