

Original Research Article

Household contact investigation coverage and barriers among pulmonary tb index cases in bidar district, Karnataka: a Nikshay-based cross-sectional study

Shivani Chauhan*, Dhananjay B. Naik, Pallavi M. Kesari

Department of Community Medicine, Bidar Institute of Medical Sciences, Bidar, Karnataka, India

Received: 03 September 2026

Revised: 16 October 2026

Accepted: 17 October 2026

*Correspondence:

Dr. Shivani Chauhan,

E-mail: shivnichauhan8273@gmail.com

Copyright: © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT

Background: This study aimed to assess household contact investigation (HCI) completion, contact examination, tuberculosis preventive treatment (TPT) initiation, and barriers to HCI implementation among pulmonary tuberculosis (TB) index cases in Bidar district, Karnataka.

Methods: A cross-sectional programmatic study was conducted using Nikshay records of pulmonary TB cases registered from July to December 2025, supplemented by structured telephonic interviews from January to June 2026. Eligible index cases were approached consecutively. Descriptive statistics, tests of association, and binomial logistic regression were used for analysis.

Results: Among 267 index cases, HCI was completed in 162 (60.7%), while 105 (39.3%) had no completed HCI. Of 418 household contacts identified among cases with completed HCI, 380 (90.9%) were examined. Although 147 contacts reportedly initiated TPT, 175 (65.5%) index cases reported no household contact initiating TPT. Among cases without completed HCI, the most frequently reported barriers were absence of a health-worker visit (65.7%) and fear/stigma (23.8%). HCI completion was not significantly associated with gender, residence, taluk, type of TB, or mode of detection.

Conclusions: HCI completion was suboptimal in Bidar, despite high examination coverage among identified household contacts. The absence of health-worker visits and fear/stigma were prominent reported barriers. Strengthening health-worker-led contact investigation and stigma-reduction efforts may improve HCI implementation.

Keywords: Contact examination, Household contact investigation, Karnataka, Nikshay, Tuberculosis preventive treatment, Tuberculosis

INTRODUCTION

Tuberculosis (TB) remains one of the leading infectious causes of morbidity and mortality worldwide. In 2022, India accounted for approximately 27% of the estimated global TB cases, representing the largest share contributed by any single country.¹ Despite substantial progress under the National TB Elimination Programme (NTEP), India continues to face major challenges in

achieving its national goal of TB elimination, highlighting the need for intensified efforts in early detection and prevention.²

Household contact investigation (HCI) is an important component of TB control because household contacts of individuals with pulmonary TB are at increased risk of TB infection and disease.^{3,4} Systematic contact investigation provides an opportunity for early

identification of additional TB cases and for initiation of preventive treatment among eligible contacts. In Chhattisgarh, systematic household contact investigation identified additional TB cases that would otherwise have remained undetected through passive case finding alone.³ A systematic review and meta-analysis of studies from low- and middle-income countries similarly demonstrated that contact investigation can yield additional active TB cases among household contacts and provides an important opportunity for TB prevention.⁴

Despite its potential benefits, implementation of HCI remains inconsistent in programmatic settings. Operational research from Chhattisgarh identified substantial gaps in household contact investigation and subsequent tuberculosis preventive treatment (TPT), indicating weaknesses across the contact-management cascade.⁵ Systematic reviews have also shown that the effectiveness of contact investigation depends on appropriate implementation, including identification and evaluation of contacts and subsequent management of those found to have TB infection or disease.⁶⁻⁸ Barriers to implementation may occur at multiple levels, including health-system constraints, difficulties in reaching and evaluating contacts, and social factors such as stigma.^{5,9}

Evidence from India further highlights challenges in translating contact investigation into effective preventive care. A mixed-methods study from rural Karnataka reported gaps in the TPT cascade among household contacts of pulmonary TB patients, including incomplete contact tracing and difficulties related to home visits, availability of household contacts, and perceived stigma.¹⁰ Such findings suggest that programmatic performance may vary according to local health-system and community contexts and underscore the importance of district-level assessment.

District-specific evidence on the implementation of HCI remains limited in Karnataka, particularly in Bidar district. Assessing the extent to which HCI is initiated, household contacts are examined, and preventive treatment is initiated, together with understanding barriers encountered during implementation, can help identify actionable gaps in TB programme delivery. Therefore, this study aimed to assess HCI coverage, household contact examination, TPT initiation, and barriers to HCI implementation among pulmonary TB index cases in Bidar district, Karnataka.

METHODS

Study design and setting

This cross-sectional programmatic study was conducted at the District Tuberculosis Centre (DTC), Bidar, Karnataka, from January to June 2026. Pulmonary TB index cases registered in the Nikshay database between July and December 2025 were screened for eligibility. Patients with valid contact details who could be contacted

telephonically and provided verbal informed consent were included. The study covered seven taluks of Bidar district: Bidar, Aurad, Basavakalyan, Bhalki, Chittaguppa, Hulsoor, and Humnabad.

Sampling method and sample size

Consecutive sampling was used. Pulmonary TB index cases registered in the Nikshay database between July and December 2025 were screened for eligibility. Patients with valid contact details who could be contacted telephonically and provided consent were included in the study. Patients who could not be contacted despite repeated telephone attempts were not included. A total of 267 pulmonary TB index cases constituted the final study sample.

Ethical considerations

The study was approved by the Institutional Ethics Committee of Bidar Institute of Medical Sciences, Bidar. Verbal informed consent was obtained from all participants before the telephonic interview. Confidentiality of participant information was maintained throughout the study, and data were used solely for research purposes.

Data collection

Data were extracted retrospectively from Nikshay records and supplemented by structured telephonic interviews with eligible pulmonary TB index cases. Information was collected on selected sociodemographic characteristics, including age, gender, residence, occupation, and taluk, and on clinical and programmatic characteristics including type of TB, mode of detection, treatment-related information, and health-worker involvement. Information related to household contact investigation included whether HCI had been conducted, the number of household contacts identified, the number examined, the type of examination performed, and screening outcomes. Information on initiation of TB preventive treatment (TPT) among household contacts was also recorded.

Patient-reported barriers were assessed using predefined response categories. Among index cases in whom HCI had not been conducted, reasons recorded included absence of a health-worker visit, fear/stigma, mistrust, timing or scheduling conflicts, lack of awareness, and other reasons. Among index cases who underwent HCI, problems reported during or after screening included stigma, transport difficulties, delays, wage loss, and crowded clinics.

Operational definitions

Household contact investigation (HCI): A systematic process of identifying household contacts of a person with pulmonary TB and arranging their evaluation for TB disease and, where appropriate, TB infection and

preventive treatment.¹¹ For the present study, HCI completion referred to reported completion of household contact investigation for the pulmonary TB index case.

Contact-examination coverage: For this study, contact-examination coverage was calculated as the proportion of identified household contacts who underwent documented evaluation for TB:

Contact-examination coverage (%) = (Number of household contacts examined/Number of household contacts identified) × 100.

TB preventive treatment (TPT): Initiation of an NTEP-recommended preventive treatment regimen among eligible household contacts after appropriate evaluation and exclusion of active TB disease.¹²

Statistical analysis

Categorical variables were summarized using frequencies and percentages, while continuous variables were summarized using means and standard deviations. Associations between categorical characteristics, including gender, residence, taluk, type of TB, and mode of detection, and HCI completion were assessed using Pearson's chi-square test. A binomial logistic regression model was fitted with HCI completion (yes/no) as the dependent variable. Age, gender, residence, taluk, type of TB, and mode of detection were included as independent variables. Adjusted odds ratios (aORs) with 95% confidence intervals (CIs) were estimated. A two-sided p-value <0.05 was considered statistically significant. Statistical analyses were performed using jamovi version 2.6.44.¹³

RESULTS

Among the 267 pulmonary TB index cases included in the study, household contact investigation (HCI) was completed in 162 (60.7%), while 105 (39.3%) did not undergo HCI. Among the 162 index cases in whom HCI was completed, 418 household contacts were identified. The mean number of household contacts identified was 2.58±1.62 per index case, with a median of 2 and a range of 1-6. One contact was identified in 67 (41.4%) index cases, two in 21 (13.0%), three in 17 (10.5%), four in 33 (20.4%), five in 18 (11.1%), and six in 6 (3.7%). Among the 162 index cases in whom HCI was completed, a total of 380 household contacts underwent examination. The mean number of household contacts examined was 2.35±1.63 per index case, with a median of 2 and a range of 0-6. Overall, 380 of 418 identified household contacts were examined, corresponding to a contact-examination coverage of 90.9%. TB preventive treatment (TPT) initiation among household contacts was recorded for all 267 index cases. A total of 147 contacts were initiated on TPT. The mean number of contacts initiated on TPT per index case was 0.55±0.91, with a median of 0 and a range of 0-5. 175 (65.5%) index cases had no contact initiated

on TPT, while 52 (19.5%), 30 (11.2%), 7 (2.6%), 1 (0.4%), and 2 (0.7%) index cases had one, two, three, four, and five contacts initiated on TPT, respectively (Table 1).

Table 1: Household contact investigation, contact examination, and TPT outcomes among pulmonary TB index cases (n=267).

Variables	Category	Number	Percentage
HCI completion (n=267)	Completed	162	60.7
	Not completed	105	39.3
Contacts identified among HCI-completed cases (n=162)	1	67	41.4
	2	21	13.0
	3	17	10.5
	4	33	20.4
	5	18	11.1
	6	6	3.7
Contacts examined among HCI-completed cases (n=162)	0	7	4.3
	1	65	40.1
	2	20	12.3
	3	25	15.4
	4	27	16.7
	5	16	9.9
Contacts initiated on TPT per index case (n=267)	0	175	65.5
	1	52	19.5
	2	30	11.2
	3	7	2.6
	4	1	0.4
	5	2	0.7

Among the 105 index cases in whom HCI was not initiated, the most common reported reason was absence of a health-worker visit (69; 65.7%), followed by fear/stigma (25; 23.8%) and mistrust (6; 5.7%). Less frequently reported reasons included timing or scheduling conflicts (3; 2.9%), lack of awareness (1; 1.0%), and other reasons (1; 1.0%) (Table 2).

Table 2: Reasons why household contact investigation (HCI) never began (n=105).

Reasons	Number	Percentage
No health-worker visit	69	65.7
Fear/stigma	25	23.8
Mistrust	6	5.7
Timing/conflict	3	2.9
Lack of awareness	1	1.0
Other	1	1.0
Total	105	100.0

Among the 162 index cases who underwent household contact investigation, stigma was the most frequently reported problem during or after screening (131/162, 80.9%), followed by transport difficulties (12/162, 7.4%),

delays (11/162, 6.8%), wage loss (6/162, 3.7%), and crowded clinics (2/162, 1.2%) (Table 3).

HCI completion was 63.6% among rural patients and 55.3% among urban patients, with no statistically significant association between residence and HCI completion ($\chi^2=1.74$, $df=1$, $p=0.187$). Across taluks, HCI completion ranged from 44.4% in Humnabad to 80.0% in Hulsoor, with no statistically significant variation ($\chi^2=10.90$, $df=6$, $p=0.092$). HCI completion was also similar among patients with bacteriologically confirmed TB (61.3%) and clinically diagnosed TB (59.3%) ($\chi^2=0.100$, $df=1$, $p=0.752$). Similarly, no significant association was observed with gender, with HCI completed in 57.3% of female and 62.8% of male patients ($\chi^2=0.809$, $df=1$, $p=0.368$) (Table 4).

Predictors of HCI completion

Binomial logistic regression was performed to identify factors associated with completion of household contact investigation (HCI). Age ($p=0.474$), gender ($p=0.440$), residence ($p=0.415$), taluk ($p=0.059$), type of TB

($p=0.223$), mode of detection ($p=0.230$), and socioeconomic status ($p=0.084$) were not significantly associated with HCI completion. At the category level, participants from Humnabad had lower odds of HCI completion compared with those from Aurad (OR=0.247, 95% CI: 0.075-0.811; $p=0.021$); however, the overall association between taluk and HCI completion was not statistically significant. Thus, none of the examined factors showed a statistically significant overall association with HCI completion at the 5% significance level.

Table 3: Problems reported during or after screening (n=162).

Problems	Number	Percentage
Stigma	131	80.9
Transport difficulties	12	7.4
Delay	11	6.8
Wage loss	6	3.7
Crowded clinic	2	1.2
Total	162	100.0

Table 4: Association of household contact investigation completion with selected characteristics of pulmonary TB index cases (n=267).

Variables	Category	No HCI, N (%)	HCI completed, N (%)	Total	χ^2 (df)	P value
Gender	Female	44 (42.7)	59 (57.3)	103	0.809 (1)	0.368
	Male	61 (37.2)	103 (62.8)	164		
Residence	Rural	63 (36.4)	110 (63.6)	173	1.74 (1)	0.187
	Urban	42 (44.7)	52 (55.3)	94		
Taluk	Aurad	8 (29.6)	19 (70.4)	27	10.90 (6)	0.092
	Basavakalyan	12 (48.0)	13 (52.0)	25		
	Bhalki	18 (40.0)	27 (60.0)	45		
	Bidar	37 (43.0)	49 (57.0)	86		
	Chittaguppa	8 (36.4)	14 (63.6)	22		
	Hulsoor	7 (20.0)	28 (80.0)	35		
	Humnabad	15 (55.6)	12 (44.4)	27		
Type of TB	BCBTB	70 (38.7)	111 (61.3)	181	0.100 (1)	0.752
	CDTB	35 (40.7)	51 (59.3)	86		
Mode of detection	CBNAAT/TRUNAT	51 (40.2)	76 (59.8)	127	1.88 (3)	0.598
	FLLPA	2 (25.0)	6 (75.0)	8		
	Radiological	46 (38.0)	75 (62.0)	121		
	Smear	6 (54.5)	5 (45.5)	11		

BCBTB, bacteriologically confirmed TB; CDTB, clinically diagnosed TB; HCI, household contact investigation; CBNAAT, Cartridge-Based Nucleic Acid Amplification Test; Note: Values are presented as n (%), with percentages calculated within each category. Pearson's chi-square test was used to assess the association between each characteristic and HCI completion

DISCUSSION

This study assessed the implementation of household contact investigation (HCI) among pulmonary TB index cases in Bidar district and identified important gaps across the contact-investigation cascade. HCI was completed for 162 of 267 index cases (60.7%). Although this indicates that a substantial proportion of index cases underwent contact investigation, nearly two-fifths (39.3%) had no documented HCI. This finding is consistent with evidence from other programmatic

settings in India, where incomplete coverage of household contact investigation has been reported. A recent programmatic analysis from Chhattisgarh documented HCI in 75% of bacteriologically confirmed pulmonary TB index cases, while a large analysis of Maharashtra programme data reported contact tracing for 84.1% of pulmonary TB patients.^{5,14} The lower coverage observed in Bidar therefore suggests an important gap between notification of pulmonary TB cases and initiation of household-level contact investigation.

Among index cases for whom HCI was completed, 418 household contacts were identified and 380 were examined, corresponding to a contact-examination coverage of 90.9%. This indicates that once HCI was initiated, the subsequent examination of identified contacts was relatively well implemented. Similar findings have been reported from Karnataka, where 91.3% of identified household contacts were screened in a mixed-methods study from Kolar district.¹⁰ In contrast, the major gap in the present study occurred earlier in the cascade, at the stage of initiating HCI itself. This distinction is programmatically important because effective contact management depends on sequential completion of contact identification, evaluation for TB disease, and appropriate preventive interventions.^{11,12} Thus, strengthening the initial linkage between identification of the index case and household contact investigation may yield greater benefit than focusing solely on examination once contacts have been identified.

The findings regarding tuberculosis preventive treatment (TPT) further demonstrate attrition along the preventive-care cascade. A total of 147 household contacts were reported to have initiated TPT, while 175 of the 267 index cases (65.5%) reported that no contact had initiated TPT. These findings should be interpreted cautiously because the present study did not establish the number of contacts eligible for TPT after age-, symptom-, and infection-related assessment; therefore, the proportion initiating TPT cannot be interpreted as coverage among all eligible contacts. Nevertheless, the findings indicate that preventive treatment did not consistently follow household contact investigation. This is consistent with programmatic studies from India demonstrating substantial losses between contact identification, evaluation, eligibility assessment and initiation of preventive treatment. In Chhattisgarh, TPT was initiated in 66% of identified contacts, while the Karnataka study from Kolar documented substantial challenges in the TPT cascade, including limited access to infection testing and difficulties in implementing contact-management processes.^{5,10} Current WHO guidance similarly emphasizes that TPT delivery requires a cascade of identifying people at increased risk, screening for TB disease, assessing TB infection where indicated, initiating an appropriate preventive regimen, and monitoring treatment.¹¹

The principal reported reason for non-initiation of HCI was absence of a health-worker visit, reported by 65.7% of index cases in whom HCI had not begun. This finding points towards a potentially important health-system bottleneck at the point of contact between the TB programme and the household. Similar operational challenges have been described in Karnataka, where home visits were not completed for all index cases and difficulties were encountered in ensuring the availability and cooperation of household contacts during visits.¹⁰ The recent Chhattisgarh programme analysis also identified health-system and facility-related factors

associated with failure to undergo household contact investigation, highlighting the importance of strengthening decentralised and routine contact-investigation mechanisms.⁵ In the present study, the finding should nevertheless be interpreted as a reported barrier rather than proof of a single causal mechanism, as reasons were obtained through telephonic interviews and may reflect both programme-level and household-level circumstances.

Fear and stigma constituted the second most frequently reported reason for non-initiation of HCI, reported by 23.8% of index cases without HCI. Importantly, among index cases who underwent HCI, stigma remained the most frequently reported problem during or after screening, affecting 80.9%. Although these two findings arise from different groups and should not be directly combined, together they indicate that stigma may persist even when contact investigation is successfully initiated. Evidence from rural Karnataka similarly identified resistance to home visits because of fear of stigma as an important implementation challenge, particularly among patients receiving care in the private sector.¹⁰ Such findings suggest that improving HCI coverage requires not only reliable health-worker follow-up but also communication and counselling that address concerns regarding disclosure, discrimination and social consequences of TB.

No statistically significant association was observed between HCI completion and gender, residence, taluk or type of TB. HCI completion was also not significantly associated with age, mode of detection or socioeconomic status in the multivariable analysis. The absence of significant associations across these characteristics suggests that the observed gap in HCI completion was not clearly concentrated within a particular demographic or clinical subgroup in this study. However, the lack of statistical significance should not be interpreted as evidence that these factors have no influence on HCI implementation. The study may have had limited power to detect modest associations, particularly across multiple taluk categories. Although the Humnabad-versus-Aurad comparison was significant at the individual category level in the regression model, the overall association between taluk and HCI completion was not statistically significant ($p=0.059$). Therefore, this isolated category-level finding should be interpreted cautiously rather than as evidence of an overall geographic effect.

The contrast between relatively high examination coverage among identified contacts and lower overall HCI completion provides an important programmatic insight. The principal gap appears to occur before contact examination between identification of the pulmonary TB index case and initiation of household investigation. Once contacts were identified, most underwent examination; however, a substantial proportion of index cases never reached this stage. Similar evidence from Indian programme settings indicates that contact investigation is

vulnerable to losses at several points in the care cascade, including initiation of home visits, contact identification, screening and preventive treatment.^{5,10,14} Improving HCI therefore requires attention to the entire cascade rather than measuring contact examination alone.

The findings also have implications for the role of frontline health workers within the TB programme. Current Indian guidance emphasizes household contact screening and preventive treatment after active TB has been ruled out, while WHO guidance similarly places contact identification, screening and preventive treatment within an integrated preventive-care cascade.^{11,12} Ensuring timely household visits following notification of pulmonary TB, maintaining accurate contact details, documenting identified and examined contacts in Nikshay, and providing repeated counselling may help reduce losses at the initial stages of the cascade. The high frequency of reported stigma also supports the need for patient-centred counselling and community-based communication strategies alongside service-delivery improvements.

The present study adds district-level programmatic evidence from Bidar, where published data on household contact investigation are limited. The present study adds district-level programmatic evidence from Bidar, where published information on household contact investigation is limited. Combining Nikshay-based programme information with structured patient-reported data provided information both on HCI implementation and on barriers experienced during the contact-investigation process. Nevertheless, the findings should be interpreted within the context of the study design. The study was conducted in a single district, relied partly on programme documentation and patient-reported information, and included index cases who could be successfully contacted telephonically. These factors may limit generalizability and may have resulted in under-recognition of undocumented or unreported programme activities.

Overall, the findings indicate that the principal opportunity for improvement lies in strengthening the transition from pulmonary TB notification to household contact investigation. Improving the reliability of health-worker visits, ensuring timely contact identification and examination, addressing stigma through repeated counselling, and strengthening documentation of the contact-management cascade could improve HCI implementation in Bidar. The relatively high examination coverage among contacts once HCI was initiated provides a useful foundation on which these improvements can be built.

This study has few limitations. Firstly, the study was conducted exclusively in Bidar district, which may limit the generalizability of the findings to other districts and programme settings. Secondly, the study relied partly on Nikshay records, and incomplete, inaccurate, or missing documentation may have resulted in the underestimation

or misclassification of HCI-related activities. Thirdly, the cross-sectional study design allowed the assessment of HCI implementation only during a specific period and did not permit the evaluation of changes over time or the long-term sustainability of HCI practices. Fourthly, information regarding barriers and challenges encountered during HCI implementation was collected through telephonic interviews and may have been influenced by recall bias and social desirability bias. Fifthly, the study included only index cases with valid contact details who could be successfully contacted by telephone and consented to participate, potentially introducing selection bias and limiting the representativeness of the findings. Finally, the study primarily focused on patient-level sociodemographic, clinical, and programmatic characteristics, while other potentially important health-system factors, such as healthcare worker workload, staffing availability, distance to households, and facility-level practices, were not systematically assessed. These factors may also have influenced the implementation of HCI activities.

CONCLUSION

Household contact investigation was completed for 60.7% of pulmonary TB index cases in Bidar district, indicating a substantial gap in implementation. However, among index cases in whom HCI was completed, contact-examination coverage was high (90.9%), suggesting that the major programmatic gap occurred at the initial stage of household contact investigation. No significant overall association was observed between HCI completion and the demographic, geographic, or clinical characteristics examined.

Absence of a health-worker visit was the most frequently reported reason for non-completion of HCI (65.7%), while fear and stigma remained important barriers. These findings highlight the need to strengthen timely health-worker-led household visits, improve counselling to address stigma and mistrust, strengthen documentation, and ensure continuity across the contact-management cascade. Strengthening linkage from index-case notification through contact identification, examination, eligibility assessment, and TPT initiation may improve implementation of household contact investigation in Bidar district.

Recommendations

Firstly, timely household visits should be strengthened by ensuring prompt visits by health workers following TB notification, with regular monitoring of HCI initiation to address gaps in household contact investigation. Secondly, stigma and mistrust associated with TB should be addressed through repeated counselling of patients and their household contacts, along with community-based awareness activities to improve acceptance of HCI and TPT. Thirdly, the contact-management cascade should be strengthened by ensuring effective linkage between

index-case notification, household contact identification, clinical examination, eligibility assessment, and TPT initiation. Fourthly, accurate and updated contact information should be maintained, and inter-area coordination should be improved when patients or household contacts move between administrative areas to ensure continuity of HCI and TPT follow-up. Fifthly, timely initiation of TPT should be prioritized among eligible household contacts after ruling out active TB, in accordance with current National Tuberculosis Elimination Programme (NTEP) guidelines. Finally, district-wide monitoring mechanisms should be strengthened through systematic programme-level interventions, regular review of routine programme data, and incorporation of feedback from patients and health workers to identify implementation gaps and develop appropriate corrective measures.

ACKNOWLEDGEMENTS

The authors sincerely thank the District Tuberculosis Officer and the staff of the District Tuberculosis Office, Bidar, for their continuous support, guidance, and cooperation during the study.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee of Bidar Institute of Medical Sciences, Bidar (Approval No. 353/BRIMS/IEC 2026-1; dated 03/02/2026)

REFERENCES

- World Health Organization. Global tuberculosis report 2023, 2023. Available at: <https://www.who.int/publications/i/item/9789240083851>. Accessed 01 June 2026.
- Central TB Division, Ministry of Health and Family Welfare, Government of India. India TB Report 2023, 2023. Available at: https://tbcindia.mohfw.gov.in/wp-content/uploads/2023/05/5646719104TB_AR_2023_04-04-2023_LRP_final.pdf. Accessed 01 June 2026.
- Khaparde K, Jethani P, Dewan PK, Nair SA, Deshpande MR, Satyanarayana S, et al. Evaluation of TB case finding through systematic contact investigation, Chhattisgarh, India. *Tuberc Res Treat*. 2015;2015:670167.
- Velleca M, Malekinejad M, Miller C, Abascal Miguel L, Reeves H, Hopewell P, et al. The yield of tuberculosis contact investigation in low- and middle-income settings: a systematic review and meta-analysis. *BMC Infect Dis*. 2021;21:1011.
- Malik C, Gupta V, Shringarpure K, Gupte HA, Shewade HD, Keshri VR, et al. Is household contact investigation a missing link for tuberculosis care in Chhattisgarh, India?-Operational research using programmatic data. *PLOS Glob Public Health*. 2025;5(9):e0005246.
- Velen K, Shingde RV, Ho J, Fox GJ. The effectiveness of contact investigation among contacts of tuberculosis patients: a systematic review and meta-analysis. *Eur Respir J*. 2021;58(6):2100266.
- Fox GJ, Barry SE, Britton WJ, Marks GB. Contact investigation for tuberculosis: a systematic review and meta-analysis. *Eur Respir J*. 2013;41(1):140-56.
- Morrison J, Pai M, Hopewell PC. Tuberculosis and latent tuberculosis infection in close contacts of people with pulmonary tuberculosis in low-income and middle-income countries: a systematic review and meta-analysis. *Lancet Infect Dis*. 2008;8(6):359-68.
- Alvi Y, Philip S, Anand T, Chinnakali P, Islam F, Singla N, et al. Situation analysis of early implementation of programmatic management of tuberculosis preventive treatment among household contacts of pulmonary TB patients in Delhi, India. *Trop Med Infect Dis*. 2024;9(1):24.
- Samudyatha UC, Soundappan K, Ramaswamy G, Mehta K, Kumar C, Jagadeesh M, et al. Outcomes and challenges in the programmatic implementation of tuberculosis preventive therapy among household contacts of pulmonary TB patients: a mixed-methods study from a rural district of Karnataka, India. *Trop Med Infect Dis*. 2023;8(12):512.
- World Health Organization. WHO operational handbook on tuberculosis. Module 1: prevention-tuberculosis preventive treatment. 2nd ed., 2024. Available at: <https://www.who.int/publications/i/item/9789240097773>. Accessed 01 June 2026.
- Central TB Division, Ministry of Health and Family Welfare, Government of India. Guidelines for Programmatic Management of Tuberculosis Preventive Treatment in India, 2021. Available at: <https://tbcindia.mohfw.gov.in/wp-content/uploads/2023/05/Guidelines-for-Programmatic-Management-of-Tuberculosis-Preventive-Treatment-in-India.pdf>. Accessed 01 June 2026.
- Furnham A, Cuppello S, Semmelink DS. Personality and Economic Behaviour. *Psychology*. 2025;16(7):854-67.
- Mundra A, Bhatnagar T, Das M, Sangale S, Patil H, Raut A, et al. Identifying missed opportunities in tuberculosis preventive treatment care cascade: analysis of programme data from Maharashtra, India. *PLOS Glob Public Health*. 2026;6(1):e0004630.

Cite this article as: Chauhan S, Naik DB, Kesari PM. Household contact investigation coverage and barriers among pulmonary tb index cases in bidar district, Karnataka: a Nikshay-based cross-sectional study. *Int J Community Med Public Health* 2026;13:6776-82.