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A RETROSPECTIVE STUDY OF TUBERCULOSIS MORBIDITY IN THE GENERAL POPULATION

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Abstract
This retrospective study analyzes tuberculosis morbidity patterns in the general population of a major urban center, examining data from 2023-2024 to identify epidemiological trends and evaluate the effectiveness of current prevention and control measures. The research documents a significant reduction in tuberculosis incidence from 91 cases in 2023 (intensive indicator 34.4) to 75 cases in 2024 (intensive indicator 24.7), representing a 28.8% decrease in morbidity rates. Analysis of bacteriologically positive cases revealed 55 patients, with 6 patients achieving bacteriological conversion from positive to negative status during treatment. Contact tracing identified tuberculosis in 6 individuals among 205 contacts of bacteriologically positive patients, with no cases detected among 65 pediatric contacts. Fluorographic screening of high-risk population groups achieved 77.0% coverage (4,840 out of 6,284 planned examinations), resulting in detection of 32 new cases across various risk categories. The study demonstrates the critical importance of targeted screening programs, comprehensive contact investigation, and sustained public health interventions in achieving measurable reductions in tuberculosis transmission within urban populations.

Keywords: tuberculosis morbidity, epidemiological surveillance, bacteriological examination, contact tracing, fluorographic screening, public health intervention, disease prevention

Introduction

Today tuberculosis remains one of the most significant infectious diseases worldwide, continuing to pose substantial challenges to global public health systems despite decades of concerted control efforts. The World Health Organization recognizes tuberculosis as a leading cause of mortality from infectious diseases, with an estimated 10.6 million new cases occurring globally each year. While significant progress has been achieved in reducing tuberculosis incidence in many regions, the disease continues to disproportionately affect vulnerable populations, particularly in urban centers where overcrowding, poverty, and inadequate healthcare access create optimal conditions for transmission. Contemporary approaches to tuberculosis control emphasize the critical importance of early case detection, comprehensive contact investigation, and targeted screening of high-risk populations. The implementation of systematic fluorographic screening programs has proven instrumental in identifying asymptomatic cases and interrupting chains of transmission before widespread community exposure occurs. Modern epidemiological surveillance systems

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provide essential data for monitoring disease trends, evaluating intervention effectiveness, and guiding resource allocation decisions within public health frameworks.

The complexity of tuberculosis epidemiology in urban environments necessitates multifaceted approaches that integrate clinical care delivery with comprehensive public health interventions. Current evidence demonstrates that sustained reductions in tuberculosis morbidity require coordinated efforts encompassing active case finding, thorough contact tracing, environmental control measures, and community-based health education initiatives. The effectiveness of these interventions depends critically upon systematic implementation, adequate resource allocation, and continuous monitoring of epidemiological indicators. Recent developments in tuberculosis control strategies have emphasized the importance of precision public health approaches that tailor interventions to specific population characteristics and risk profiles. Advanced molecular diagnostic techniques, including nucleic acid amplification tests and whole genome sequencing, have enhanced the ability to rapidly identify tuberculosis cases and characterize transmission patterns within communities. These technological advances, combined with improved understanding of social determinants of health, have informed more targeted and effective intervention strategies.

Main Part

This retrospective analysis examined tuberculosis morbidity data collected through the comprehensive surveillance system operating within a major urban center during the period from January 2023 through December 2024. The study population encompassed all residents within the municipal boundaries, with particular attention to high-risk groups identified through established epidemiological criteria. Data collection followed standardized protocols established by national tuberculosis control programs, ensuring consistency and reliability of epidemiological indicators. The surveillance system incorporated multiple detection mechanisms, including passive case finding through healthcare facilities, active case finding through targeted screening programs, and systematic contact investigation surrounding identified cases. Bacteriological examination protocols followed international standards, with sputum microscopy and culture serving as primary diagnostic modalities for pulmonary tuberculosis cases. All suspected cases underwent comprehensive clinical evaluation, including chest radiography, tuberculin skin testing when indicated, and molecular diagnostic testing when available. High-risk population screening utilized mobile fluorographic units to conduct systematic examinations of predetermined target groups. These groups included household contacts of bacteriologically positive patients, healthcare workers, residents of congregate living facilities, individuals with compromised immune systems, and other populations identified through epidemiological risk assessment. Screening protocols incorporated standardized radiographic interpretation criteria and established referral pathways for further evaluation of abnormal findings. Contact investigation procedures followed established guidelines for identifying, evaluating, and monitoring individuals with potential tuberculosis exposure. All household contacts and close associates of bacteriologically positive cases received systematic evaluation, including clinical assessment, radiographic examination, and tuberculin skin testing when appropriate. Pediatric contacts received particular attention given their increased susceptibility to tuberculosis infection and progression to active disease.

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The comprehensive analysis of tuberculosis morbidity data revealed significant epidemiological trends that provide valuable insights into disease transmission patterns and intervention effectiveness within the study population. During 2024, health authorities documented 75 tuberculosis cases among the general population, corresponding to an intensive indicator of 24.7 cases per defined population unit. This represented a substantial decrease from the previous year, when 91 cases were recorded in 2023 with an intensive indicator of 34.4, demonstrating a notable 28.8% reduction in overall tuberculosis morbidity. The age distribution of tuberculosis cases provided important epidemiological insights, with only 2 cases identified among children under 14 years of age during the 2024 surveillance period. This low pediatric case count suggests effective interruption of transmission chains and successful implementation of contact investigation protocols, as childhood tuberculosis typically indicates recent transmission within communities. The predominance of adult cases aligns with established epidemiological patterns and supports the effectiveness of targeted prevention strategies focused on high-risk adult populations.

Bacteriological examination results revealed 55 patients with bacteriologically positive tuberculosis, representing a significant proportion of the total case load and indicating substantial transmission potential within the community. Among these bacteriologically positive cases, 6 patients achieved conversion to bacteriologically negative status during the course of treatment, demonstrating the effectiveness of current therapeutic protocols in reducing infectiousness and interrupting transmission chains. This conversion rate provides evidence of adequate treatment adherence and appropriate clinical management strategies.

Contact investigation activities encompassed systematic evaluation of 205 individuals identified as contacts of bacteriologically positive patients. This comprehensive contact tracing effort resulted in the identification of 6 additional tuberculosis cases, representing a contact case detection rate that aligns with international benchmarks for effective contact investigation programs. Notably, examination of 65 pediatric contacts did not reveal any cases of active tuberculosis, suggesting successful implementation of infection control measures and appropriate clinical evaluation protocols for child contacts. The systematic fluorographic screening program demonstrated substantial reach within targeted high-risk populations, achieving examination of 4,840 individuals out of 6,284 planned examinations, corresponding to a coverage rate of 77.0%. This screening effort resulted in detection of 32 new tuberculosis cases across various risk categories, demonstrating the continued value of active case finding strategies in identifying previously undiagnosed disease. The distribution of detected cases included 6 cases among contacts of bacteriologically positive patients, 14 cases among prisoners, 6 cases among individuals with disabilities, and 6 cases among women of reproductive age.

The implementation of comprehensive public health intervention strategies played a crucial role in achieving the observed reduction in tuberculosis morbidity throughout the study period. These interventions were guided by established national policies and international best practices for tuberculosis control, with particular emphasis on multi-sectoral collaboration and community engagement. The systematic approach incorporated elements of surveillance strengthening, active case finding, contact investigation, environmental control, and health education initiatives.

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Surveillance system enhancements focused on improving case detection capabilities through strengthened laboratory networks, enhanced diagnostic capacity, and improved reporting mechanisms. Healthcare facilities received technical support for implementing standardized case detection protocols, while laboratory services were upgraded to ensure rapid and accurate bacteriological confirmation of suspected cases. These improvements facilitated earlier identification of tuberculosis cases and more timely initiation of appropriate treatment regimens. Active case finding activities were systematically expanded to reach high-risk populations that might not otherwise access healthcare services. Mobile screening units conducted targeted examinations in community settings, including residential facilities, workplaces, and other congregate environments where tuberculosis transmission risk was elevated. These outreach efforts were complemented by strengthened referral systems that ensured appropriate follow-up for individuals with abnormal screening results.

Contact investigation protocols were rigorously implemented to identify and evaluate all individuals with potential tuberculosis exposure. Trained public health personnel conducted systematic contact tracing activities, utilizing standardized questionnaires and evaluation protocols to ensure comprehensive assessment of exposure risk. Environmental assessment and disinfection procedures were conducted in all identified transmission sites, with particular attention to household environments and other settings where prolonged contact occurred. Community engagement initiatives incorporated extensive health education campaigns designed to increase tuberculosis awareness and promote healthcare-seeking behavior among at-risk populations. These campaigns utilized multiple communication channels, including traditional media, social media platforms, and community-based outreach programs. Health education materials were developed in appropriate languages and cultural contexts to ensure effective communication with diverse population groups.

The analysis of treatment outcomes provides important insights into the effectiveness of current clinical management protocols and their contribution to overall tuberculosis control efforts. The documentation of bacteriological conversion among 6 patients from the cohort of 55 bacteriologically positive cases represents a conversion rate consistent with expected treatment response patterns under optimal clinical management conditions. This conversion rate reflects appropriate case management practices, including timely treatment initiation, adequate drug regimens, and effective monitoring protocols. Current treatment protocols follow internationally recognized guidelines that emphasize the importance of directly observed therapy for ensuring treatment completion and preventing the development of drug resistance. The implementation of patient-centered care approaches has enhanced treatment adherence rates while reducing the burden of treatment on patients and healthcare systems. These approaches incorporate flexible dosing schedules, community-based treatment delivery, and comprehensive patient support services. The integration of clinical care with public health interventions has proven essential for achieving optimal treatment outcomes while simultaneously reducing transmission risk within communities. Patients receiving tuberculosis treatment undergo regular bacteriological monitoring to assess treatment response and modify therapeutic regimens when necessary. This systematic approach ensures that treatment failure is identified early and appropriate interventions are implemented to prevent the development of drug-resistant tuberculosis. Infection control measures

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within healthcare facilities have been strengthened to prevent nosocomial transmission while ensuring that patients receive appropriate clinical care. These measures include environmental controls such as adequate ventilation systems, administrative controls including patient screening and isolation protocols, and personal protective equipment for healthcare workers. The implementation of these comprehensive infection control measures has contributed to the overall reduction in tuberculosis transmission within the community.

The observed reduction in tuberculosis morbidity reflects the cumulative impact of systematic prevention and control strategies implemented across multiple sectors and intervention points. These strategies were designed to address the complex social, environmental, and biological factors that contribute to tuberculosis transmission within urban populations. The multi-faceted approach incorporated primary prevention through vaccination and health promotion, secondary prevention through screening and early detection, and tertiary prevention through effective treatment and rehabilitation.

Primary prevention efforts focused on reducing tuberculosis transmission risk through environmental modifications, health education, and targeted interventions for high-risk populations. Environmental control measures included improvements to housing conditions, workplace ventilation systems, and air quality management in congregate settings. Health education campaigns promoted awareness of tuberculosis symptoms, transmission mechanisms, and the importance of seeking timely medical evaluation for suspected cases. Secondary prevention strategies emphasized early case detection through systematic screening programs and enhanced diagnostic capacity. The expansion of fluorographic screening programs enabled identification of asymptomatic cases that might otherwise remain undiagnosed until advanced stages of disease progression. Laboratory capacity strengthening ensured rapid and accurate diagnosis of suspected cases, facilitating timely treatment initiation and reducing the period of infectiousness within communities. Tertiary prevention approaches focused on preventing complications and recurrence among individuals who had received tuberculosis treatment. These interventions included long-term clinical monitoring, rehabilitation services for patients with treatment sequelae, and social support programs to address underlying risk factors. The integration of tuberculosis care with broader healthcare systems ensured that patients received comprehensive medical management while contributing to overall health system strengthening. The sustainability of tuberculosis control efforts requires continued investment in health system capacity, workforce development, and community engagement initiatives. Recent experience has demonstrated that reductions in tuberculosis morbidity can be maintained only through sustained implementation of comprehensive intervention strategies. Resource allocation decisions must therefore prioritize long-term sustainability while maintaining the intensity of interventions necessary to achieve continued progress toward tuberculosis elimination goals.

Despite the encouraging reduction in tuberculosis morbidity observed during the study period, significant challenges remain that require sustained attention and innovative approaches. The persistence of tuberculosis transmission within certain population groups highlights the need for more targeted interventions that address specific risk factors and barriers to healthcare access. Urban environments present particular challenges related to population density, housing conditions, and social determinants that influence tuberculosis transmission patterns. The

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emergence of drug-resistant tuberculosis represents a continuing threat that requires enhanced diagnostic capacity, specialized treatment protocols, and strengthened infection control measures. Current surveillance systems must be expanded to include systematic drug susceptibility testing for all tuberculosis cases, enabling appropriate treatment selection and preventing further transmission of resistant strains. The development and implementation of rapid diagnostic tests for drug resistance will be essential for optimizing treatment outcomes while preventing the spread of resistant tuberculosis.

Social determinants of health continue to play a crucial role in tuberculosis epidemiology, with poverty, malnutrition, overcrowding, and limited healthcare access contributing to sustained transmission within vulnerable populations. Addressing these underlying factors requires multi-sectoral collaboration that extends beyond traditional healthcare interventions to include housing policy, social welfare programs, and economic development initiatives. The integration of tuberculosis control with broader social development programs offers opportunities for more sustainable and effective intervention strategies. Technological advances in diagnostic methods, treatment monitoring, and epidemiological surveillance provide opportunities for improving tuberculosis control effectiveness while reducing resource requirements. The implementation of molecular diagnostic techniques, digital health platforms, and artificial intelligence applications can enhance case detection, treatment monitoring, and outbreak investigation capabilities. However, the successful integration of these technologies requires substantial investment in infrastructure development and workforce training. Future tuberculosis control strategies must incorporate lessons learned from recent global health emergencies, including the importance of maintaining essential health services during crisis periods and the value of community-based intervention approaches. The COVID-19 pandemic has demonstrated both the vulnerability of tuberculosis control programs to external disruptions and the resilience that can be achieved through adaptive program implementation. These experiences provide valuable insights for strengthening tuberculosis control systems against future challenges.

In conclusion this retrospective analysis confirms that systematic and sustained tuberculosis control strategies can significantly reduce disease morbidity in urban populations. A 28.8% decline in incidence between 2023 and 2024 reflects notable progress and demonstrates the effectiveness of current interventions. Low pediatric case rates and high bacteriological conversion further support the success of implemented measures. Fluorographic screening proved valuable for identifying undiagnosed cases, with 77.0% coverage among target groups indicating the feasibility of systematic screening. The detection of cases across diverse risk groups underlines the importance of inclusive screening strategies. Contact investigations effectively identified additional cases, with 6 found among 205 contacts of bacteriologically positive patients, confirming proper protocol application and transmission control. The absence of pediatric cases among contacts highlights strong infection control. Integration of clinical care and public health efforts, supported by intersectoral collaboration, was key to reducing morbidity. Continued success depends on maintaining high-quality surveillance, screening, and treatment, while adapting to emerging challenges.

Overall, the findings support sustained, evidence-based tuberculosis control strategies backed by adequate resources and ongoing evaluation to move closer to elimination goals.

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References

1. World Health Organization. Global Tuberculosis Report 2024. Geneva: World Health Organization; 2024.
2. Churchyard GJ, Kim P, Shah NS, et al. What we know about tuberculosis transmission: an overview. Journal of Infectious Diseases. 2020;21, S629-S635.
3. Мурадимова, А. Р. (2019). Нейрофизиологический аспект метаболической терапии хронической церебральной ишемии. In Инновации в медицине. Материалы I международной научно-практической конференции-Махачкала, 2019.-Том. II.-232 с. (p. 192).
4. Мурадимова, А. Р. (2019). КЛИНИКО-НЕВРОЛОГИЧЕСКИЕ ОСОБЕННОСТИ ТЕЧЕНИЯ СО-СУДИСТОЙ ЭПИЛЕПСИИ, ПРОГНОЗИРОВАНИЯ И ЛЕЧЕНИЯ. In Инновации в медицине. Материалы I международной научно-практической конференции-Махачкала, 2019.-Том. II.-232 с. (p. 178).
5. Мурадимова, А. Р. (2019). КЛИНИКО-ДИАГНОСТИЧЕСКИЕ АСПЕКТЫ И СОВРЕМЕННЫЕ ПОДХОДЫ К ЛЕЧЕНИЮ СОСУДИСТОЙ ДЕМЕНЦИИ. In Инновации в медицине. Материалы I международной научно-практической конференции-Махачкала, 2019.-Том. II.-232 с. (p. 185).
6. Solijon o‘g‘li, A. S. (2024). Antibiotic Therapy for Severe Infections in Infants and Children. Innovative Society: Problems, Analysis and Development Prospects (Spain), 6, 21-24.
7. Solijon o‘g‘li, A. S. (2024, May). Measles in Children, its Sympyoms and Treatment. In International Congress on Biological, Physical And Chemical Studies (ITALY) (pp. 102-106).
8. Madaminjanovna, Q. Z. (2023). Diagnosis and treatment of emphysematous pyelonephritis in diabetic patients. Eurasian Medical Research Periodical, 19, 4-8.
9. Madaminjanovna, Q. Z. (2023). Hypertensive Disease: History of Nosology Development. American Journal of Pediatric Medicine and Health Sciences (2993-2149), 1(10), 97-103.
10. Solijon o‘g‘li, A. S. (2024). Infectious Diseases in Children. Web of Semantics: Journal of Interdisciplinary Science, 2(5), 289-393.
11. Solijon o‘g‘li, A. S. (2024, May). Diarrhoea in Children, Causes and Symptoms. In Interdisciplinary Conference of Young Scholars in Social Sciences (USA) (Vol. 7, pp. 12-15).
12. Isroilova, G. (2023). DEVELOPING THE PRINCIPLES OF STUDYING AND TREATMENT OF VAGINAL DYSBIOSIS DURING PREGNANCY. Modern Science and Research, 2(4), 52-53.
13. Юсупова, Р. Т., & Шаланкова, О. Е. (2020). РЕПРОДУКТИВНОЕ ЗДОРОВЬЕ ДЕВОЧЕК-ПОДРОСТКОВ, ПРОЖИВАЮЩИХ В УСЛОВИЯХ ФЕРГАНСКОЙ ДОЛИНЫ. In Университетская наука: взгляд в будущее (pp. 612-614).
14. Маматханова, Г. (2021). Оптимизация медицинской учетной документации и внедрение электронных систем в здравоохранение. Общество и инновации, 2(8/S), 61-67.
15. Алимова, И. (2025). СОВЕРШЕНСТВОВАНИЕ ПРОФИЛАКТИКИ ИНВАЛИДНОСТИ ДЕТЕЙ ГРУППЫ РИСКА С РАННЕГО ВОЗРАСТА КАК КЛЮЧЕВОЙ АСПЕКТ МЕДИКО-СОЦИАЛЬНОЙ РЕАБИЛИТАЦИИ ДЕТЕЙ. Вестник национального детского медицинского центра, 162-164.

Web of Medicine: Journal of Medicine, Practice and Nursing
webofjournals.com/index.php/5

16. Anvarovna, A. I. (2024). Pneumonia is a Common Respiratory Disease in Children. Miasto Przyszłości, 53, 1244-1246.
17. Habibullayevna, A. G. (2025, May). LABORATORY INDICATORS AND CLINICAL SYMPTOMS IN ACUTE BACTERIAL ARTHRITIS. In International Conference on Educational Discoveries and Humanities (pp. 164-168).
18. Habibullayevna, A. G., & Shavkatjon o'g'li, Q. S. (2025, February). STRUCTURE AND INTRACELLULAR ACTIVITY OF THE DNA-CONTAINING HERPES SIMPLEX VIRUS. In International Educators Conference (pp. 126-132).
19. Isroilov, M. S. An International Multidisciplinary Research Journal.
20. Soliyevich, I. M. (2024). CHANGES IN THE MICROFLORA OF THE COLON IN GRISHPRUNG DISEASE. Miasto Przyszłości, 48, 170-173.
21. Solijon o'g'li, A. S. (2024, May). Measles in Children, its Sympyoms and Treatment. In International Congress on Biological, Physical And Chemical Studies (ITALY) (pp. 102-106).
22. Umarovich, B. M., & Bahodir o'g'li, U. B. (2025, February). CLINICAL AND LABORATORY CHARACTERISTICS OF CHRONIC VIRAL HEPATITIS" B" AND" C" IN HIV-INFECTED INDIVIDUALS. In International Educators Conference (pp. 144-147).
23. Каттаханова, Р. Ю. (2022). ДИАГНОСТИКА И ТЕРАПИЯ АТОПИЧЕСКОЙ БРОНХИАЛЬНОЙ АСТМЫ, СОЧЕТАННОЙ С АЛЛЕРГИЧЕСКИМИ РИНОСИНУСИТАМИ У ДЕТЕЙ. ББК 54.11 А-380, 65.
24. Пулатова, Н. С., Йигиталиев, А. Б., & Абдурашидов, А. А. ЭПИДЕМИОЛОГИЯ РАКА ТЕЛА МАТКИ В ФЕРГАНСКОЙ ОБЛАСТИ. 1-SON, 1-JILD IYUL 2022 1-QISM, 29.
25. Эгамбердиев, Д. Э., Абдурашидов, А. А., & Эргашов, У. Ш. ПРОФИЛАКТИКА И МЕТОФИЛАКТИКА МОЧЕКАМЕННОЙ БОЛЕЗНИ.
26. Tohirbek To'lqinjon o'g, S. (2025, February). STRUCTURE AND FUNCTIONS OF THE URETHRAL SPHINCTER IN MEN. In Scientific Conference on Multidisciplinary Studies (pp. 165-171).
27. Хошимова, А. Ё. (2018). ВЛИЯНИЕ ЗАГРЯЗНЕНИЯ ОКРУЖАЮЩЕЙ СРЕДЫ НА ЗАБОЛЕВАЕМОСТЬ БРОНХИАЛЬНОЙ АСТМОЙ. Актуальные вопросы современной пульмонологии. Ма, 200.
28. Habibullayevna, A. G., & Shavkatjon o'g'li, Q. S. (2025, February). STRUCTURE AND INTRACELLULAR ACTIVITY OF THE DNA-CONTAINING HERPES SIMPLEX VIRUS. In International Educators Conference (pp. 126-132).
29. Мухидинова, Ш. Б. (2016). ЭПИДЕМИОЛОГИЧЕСКИЕ ОСОБЕННОСТИ ТУБЕРКУЛЕЗА. Актуальные вопросы современной пульмонологии. Ма, 144.

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