

# A Descriptive Study to Assess the Knowledge Regarding Tuberculosis and its Prevention Among the Population in Chaubepur Community, Kanpur

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**Abstract:** TB is spread from person to person through the air. When people with lung TB cough, sneeze or spit, they propel the TB germs into the air. A person needs to inhale only a few of these germs to become infected. About one-quarter of the world's population has latent TB, which means people have been infected by TB bacteria but are not (yet) ill with the disease and cannot transmit the disease. People infected with TB bacteria have a 5–15% lifetime risk of falling ill with TB. Non experimental research approach was considered to be appropriate for the present study as it aimed to assess the knowledge regarding tuberculosis and its prevention among population in Chaubepur, Kanpur. The samples were population in the Chaubepur, Kanpur. The sample consist of 60 people who fulfill the criteria for sample selection and who were available at the Chaubepur community at time of data collection. Written consent was taken from the people who were selected as sample. Self- structured knowledge questionnaire containing 30 questions and checklist containing 10 questions was used to evaluate the knowledge and practice of people regarding prevention of tuberculosis. The findings revealed that the overall mean knowledge score of people regarding prevention of tuberculosis was 303 and overall practice mean score was 33. The study contains with P value is 0.000067, and its significant level is 0.05. The study is also showed that there is an association between knowledge and practice of peoples with selected demographic variables like age, sex, education, occupation, marital status, family income, type of house and people's concept about tuberculosis except for the type of family which is not significant.

**Keywords:** People, knowledge, practice.

## 1. Introduction

Tuberculosis (TB) is caused by bacteria (*Mycobacterium tuberculosis*) that most often affect the lungs. Tuberculosis is curable and preventable. TB is spread from person to person through the air. When people with lung TB cough, sneeze or spit, they propel the TB germs into the air. A person needs to inhale only a few of these germs to become infected. About one-quarter of the world's population has latent TB, which means people have been infected by TB bacteria but are not (yet) ill with the disease and cannot transmit the disease. People infected with TB bacteria have a 5–15% lifetime risk of falling ill with TB. However, persons with compromised immune

systems, such as people living with HIV, malnutrition or diabetes, or people who use tobacco, have a much higher risk of falling ill. When a person develops active TB disease, the symptoms (such as cough, fever, night sweats, or weight loss) may be mild for many months. This can lead to delays in seeking care, and results in transmission of the bacteria to others. People with active TB can infect 10–15 other people through close contact over the course of a year. Without proper treatment, 45% of HIV-negative people with TB on average and nearly all HIV positive people with TB will die. Tuberculosis mostly affects adults in their most productive years. However, all age groups are at risk. Over 95% of cases and deaths are in developing countries. People who are infected with HIV are 20 to 30 times more likely to develop active TB (see TB and HIV section below). The risk of active TB is also greater in persons suffering from other conditions that impair the immune system. One million children (0–14 years of age) fell ill with TB, and 230 000 children (including children with HIV associated TB) died from the disease in 2017. Tobacco use greatly increases the risk of TB disease and death. 7.9% of TB cases worldwide are attributable to smoking. Common symptoms of active lung TB are cough with sputum and blood at times, chest pains, weakness, weight loss, fever and night sweats. Many countries still rely on a long-used method called sputum smear microscopy to diagnose TB. Trained laboratory technicians look at sputum samples under a microscope to see if TB bacteria are present. Microscopy detects only half the number of TB cases and cannot detect drug-resistance. The use of the rapid test Xpert MTB/RIF® has expanded substantially since 2010, when WHO first recommended its use. The test simultaneously detects TB and resistance to rifampicin, the most important TB medicine. Diagnosis can be made within 2 hours and the test is now recommended by WHO as the initial diagnostic test in all persons with signs and symptoms of TB. Diagnosing multi-drug resistant and extensively drug-resistant TB (see Multidrug resistant TB section below) as well as HIV-associated TB can be complex and expensive. In 2016, 4 new diagnostic tests were recommended by WHO – a rapid molecular test to detect TB at

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peripheral health centers where Xpert MTB/RIF cannot be used, and 3 tests to detect resistance to first- and second-line TB medicines.

Worldwide, TB is the one of the top 10 causes of death and the leading cause from a single infectious agent. Millions of people continue to fall sick with TB each year. In 2017, TB causes an estimate 1.3 Million death among HIV – ve people and there were an additional 3 lakh death from TB among HIV + ve people. Globally the best estimate is that 10 million people developed TB disease in 2017; 5.8 million men, 3.2 million women and 1 million children. About 1.7 billion people, 23% of the world population, are estimate to have a latent TB infection and are thus at risk of developing active TB disease during their life time. By 2020, the TB incidence rate need to be falling at 4-5% per year and the proportion of the people with TB who die from the disease need to fall to 10%.

TB is a treatable and curable disease. Active, drug-susceptible TB disease is treated with a standard 6 month course of 4 antimicrobial drugs that are provided with information, supervision and support to the patient by a health worker or trained volunteer. Without such support, treatment adherence can be difficult and the disease can spread. The vast majority of TB cases can be cured when medicines are provided and taken properly. Between 2000 and 2017, an estimated 54 million lives were saved through TB diagnosis and treatment.

## 2. Research Method

Research methodology indicates the generalized pattern of organizing the procedure for gathering valid and reliable data for investigation. It includes the strategies to be used to collect and analyze the data to accomplish the research objective and to test research hypothesis. Methodology of research indicates the general pattern of organizing the procedures of answering the research question. Research design is defined as a framework of methods and techniques chosen by a researcher to combine various components of research in a reasonably logical manner so that the research problem is efficiently handled. It provides insights about “how” to conduct research using a particular methodology. Every researcher has a list of research questions which need to be assessed – this can be done with research design. A descriptive design was considered appropriate for the study to assess the knowledge regarding tuberculosis and its prevention among the population in Chaubepur, Kanpur. Description of the study environment including the location and experimental setup. For studies of web usage, this includes the browsing environment as well as any visible data collection methods. The study was conducted at community Chaubepur Kanpur and CHC Chaubepur, Kanpur. The rationale for selecting this setting for the study was the researcher’s familiarity with the setting, geographical proximity and easy availability of the samples. sample is a subset of population selected to in a research study. 25 The samples were population in the Chaubepur, Kanpur. The sample consist of 60 people who fulfill the criteria for sample selection and who were available at the Chaubepur community at time of data collection.

## 3. Literature Review

A literature review surveys scholarly articles, books, dissertations, conference proceedings and other resources which are relevant to a particular issue, area of research, or theory and provides context for a dissertation by identifying past research. Research tells a story and the existing literature helps us identify where we are in the story currently. It is up to those writing a dissertation to continue that story with new research and new perspectives but they must first be familiar with the story before they can move forward.

### *Studies related to the risk factor of the tuberculosis:*

Al-Ghafli, Varghese, Enani, et. al., conducted study in March 2019 “Demographic risk factors for extra-pulmonary tuberculosis among adolescents and adults in Saudi Arabia.”; despite low infectious potential of extrapulmonary tuberculosis (EPTB), it poses significant clinical challenges in terms of diagnosis and treatment monitoring. Understanding the main demographical risk factors for disease characteristics of EPTB plays a crucial role in speeding up diagnosis process and 8 improving overall clinical experience. The aim of this study was to investigate the main demographical and clinical risk factors for EPTB among adults and adolescents for the first time in Saudi Arabia. A cross-sectional multicenter study was carried out on a collection of 902 extrapulmonary *Mycobacterium tuberculosis* complex (MTBC) isolates with demographical and clinical data. All isolates were subjected to spoligotyping and 24-loci based MIRU-VNTR typing. The association between two potential variables was assessed using odd ratios (OR) calculations. Independent risk factors for EPTB and diseases characteristics of EPTB were identified using multivariate regression model analyses. Gender was found to be significantly associated with lymph node, gastrointestinal, central nervous system and urogenital TB. Lymph node TB showed statistical association to age group below 25 years, non-Saudis and South East Asian ethnicity. While gastrointestinal TB demonstrated an association with patients above 60 years old, and Saudis. Multivariate analysis showed that gender is an independent risk factor to urogenital TB (p 0.03) and lymph node TB (p 0.005).

### *Studies related to causes of tuberculosis:*

Vedika Yadav, Deepali Bisht, et.al. conducted a study in 2019 “Tuberculosis: A Comprehensive Study on its Evolution, Variants, Causes and Treatment Related Challenges”; Tuberculosis, one of the most appalling disorders of the ancient times and still the major fatality affecting bacterial infection, is the condition principally concerned with the pulmonary complexities as well as sometimes damaging extrapulmonary regions in the body also, demands proper medication and monitoring to be rectified effectively. In countries like India, the incremental prevalence of the resistant TB makes it obligatory to act rigorously in order to control the TB cases and adhere to the TB management programmes. Resistant tuberculosis represents the irrepressible state where the available TB drugs become insufficient for the treatment, worsening the lives of the sufferers. The situation is emerging in such a way that there would the time when the encountered totally-drug resistant cases become effectively high,

emphasizing the necessity to develop drugs with improvised antagonistic capabilities to eradicate the existence of Mycobacterium. This review represents a thorough study of the dreadful existence of the pathogen providing all the required information for a better understanding of the disease and its resistance.

*Studies related to diagnostic finding of tuberculosis:*

K. K. Chopra, Shweta Singh conducted a study in 2020 “Newer diagnostic tests for tuberculosis, their utility, and their limitations”; Tuberculosis (TB) has remained a disease of public health importance since ages, affecting more than 10 million people globally and taking lives of 2 million people worldwide every year. Despite the dramatic improvements made in providing high-quality TB diagnostic services, since 14 the discovery of the causative bacilli, many people with TB remain undiagnosed or get diagnosed only after long delays. Ten countries account for 77% of this gap and use only smear microscopy for diagnosis, which forms the backbone of TB diagnosis since 100 years. The challenge becomes onerous when disease gets associated with drug resistance, Human Immuno Virus (HIV) and other diseases in an environment where transmission is becoming easier by the day. It becomes of paramount importance to address this biggest public health challenge by delivering timely diagnosis using advanced technologies.

*Studies related on the prevention of tuberculosis:*

Andrew J. Nunn, M.Sc., Patrick P.J. Phillips, conducted a study in 2019; A Trial of a Shorter Regimen for Rifampin-Resistant Tuberculosis; Cohort studies in Bangladesh showed promising cure rates among patients with multidrug-resistant tuberculosis who received existing drugs in regimens shorter than that recommended by the World Health Organization (WHO) in 2011. We conducted a phase 3 non-inferiority trial in participants with rifampin-resistant tuberculosis that was susceptible to fluoroquinolones and aminoglycosides. Participants were randomly assigned, in a 2:1 ratio, to receive a short regimen (9 to 11 months) that included high-dose moxifloxacin or a long regimen (20 months) that followed the 2011 WHO guidelines. The primary efficacy outcome was a favorable status at 132 weeks, defined by cultures negative for Mycobacterium tuberculosis at 132 weeks and at a previous occasion, with no intervening positive culture or previous unfavorable outcome. An upper 95% confidence limit for the between-group difference in favorable status that was 10 percentage points or less was used to determine noninferiority.

*Studies related to the management of tuberculosis:*

Francesca Conradie, M.B., B. Ch, et.al. Conducted a study in 2020; “Treatment of Highly Drug-Resistant Pulmonary Tuberculosis”; Patients with highly drug resistant forms of tuberculosis have limited treatment options and historically have had poor outcomes. In an open-label, single-group study in which follow-up is ongoing at three South African sites, we investigated treatment with three oral drugs-bedaquiline, pretomanid, and linezolid-that have bactericidal activity against tuberculosis and to which there is little preexisting resistance. We evaluated the safety and efficacy of the drug combination for 26 weeks in patients with extensively drug-resistant

tuberculosis and patients with multidrug-resistant tuberculosis that was not responsive to treatment or for which a second-line regimen had been discontinued because of side effects. The primary end point was the incidence of an unfavorable outcome, defined as treatment failure (bacteriologic or clinical) or relapse during follow-up, which continued until 6 months after the end of treatment. Patients were classified as having a favorable outcome at 6 months if they had resolution of clinical disease, a negative culture status, 20 and had not already been classified as having had an unfavorable outcome. Other efficacy end points and safety were also evaluated.

#### 4. Result and Discussion

This chapter relates with the findings of the present study with the findings of the studies conducted in the past. Present study findings have been discussed accordance with the objective of this study. Analysis of the data regarding 1st objective of the study i.e., to assess the knowledge regarding tuberculosis and its prevention among the population in Chaubepur, Kanpur. Interpretation of score as inadequate, mild, moderate, and adequate. Inadequate have scored below 15 and percentage is 3%. Mild have scored 15-20 and percentage is 27%. Moderate have scored 20-25 and percentage is 47%, adequate have scored 25-30 and percentage is 23%. Analysis of the 2nd objective of the study i.e. to association between knowledge and practice regarding tuberculosis with their demographic variables in Chaubepur, Kanpur. Association between age and knowledge frequency. 20-40 age have 30, 40-60 age have 24 and 60-80 have 6 knowledge frequency. The mean  $\bar{X}$  value is 42 and S.D. value is -1.6. Association between gender and knowledge male, female, and other. Male have 36, female have 24 and other have 0 knowledge frequency. The mean ( $\bar{X}$ ) value is 30 and S.D. value is 6. Association between education and knowledge such as educated, illiterate, and other. Educated have 36, illiterate have 18 and other have 6 knowledge frequency. The mean ( $\bar{X}$ ) value is 20 and S.D. value is 12.32. Association between occupation and knowledge such as self-employment, services, and other. Self-employment have 27, services have 18 and other have 15 knowledge frequency. The mean ( $\bar{X}$ ) value is 20 and S.D. value is 5.09. Association between religious and knowledge such as Hindu, Muslim, Christian and others. Hindu have 33, Muslim have 21, Christian has 3 and other have 3 knowledge frequency. The mean ( $\bar{X}$ ) value is 15 and S.D. value is 12.72. Association between marital status and knowledge such as married, unmarried and divorced. Married have 35, unmarried have 23 and divorced have 2 knowledge frequency. The mean ( $\bar{X}$ ) value is 20 and S.D. value is 13.6. Association between family and knowledge such as joint family, and nuclear family. Joint family have 45, and nuclear family have 15 knowledge frequency. The mean ( $\bar{X}$ ) value is 30 and S.D. value is 15. 50. Association between residence and knowledge such as semi urban and rural. Semi urban have 20 and rural have 40 knowledge frequency. The mean ( $\bar{X}$ ) value is 30 and S.D. value is 10. The study contains with P value is 0.000067, and its significant level is 0.05.

## 5. Conclusion

The following conclusions were drawn on the basis of the results of the present study topic to assess the knowledge and practices of peoples regarding prevention of tuberculosis in selected demographical area of chaubepur, Kanpur Nagar with a view to develop an information booklet. There is a felt need for bridging the gap between knowledge and practice areas of prevention of tuberculosis in the community. It is a challenge for all the health personnel in the community like community health, school health nurse and other health workers especially in rural area. The implication is discussed under the following headings:

*1. Nursing practice:* The most important role of the nurse is to provide awareness to the public regarding prevention of tuberculosis. The nurse plays an important role in disease prevention and health promotion. Several implications can be drawn from the present study for nursing practice. The health personnel have added responsibility in educating the public regarding disease prevention and help in maintenance of health by modification of life styles. Health education conducted by the health personnel in the hospital and community helps in wider coverage of public in preventing tuberculosis. If nursing personnel provide the necessary information regarding tuberculosis and its prevention by using information booklet, they are the correct persons to educate peoples there by peoples can understand and they can educate their family members, from family members to the neighbors, from them to the community. Nurses can motivate the public in prevention of the disease.

*2. Nursing education:* The nursing curriculum should emphasize on imparting health information to community using different teaching methods. Nursing student should be educated on health promotion, disease prevention and early detection of the disease. The information booklet can be used as an illustrative informational mode to the students as well as clients and their family members and the community for which they have to be prepared properly.

*3. Nursing administration:* Nursing administration should take an initiative creating policies and plans in providing education to the people. In-service education to be provided to the nursing personnel at various levels to make them aware to tuberculosis and its prevention by nursing administrators. Knowledge and practices regarding prevention of tuberculosis should be update by utilizing various communication facilities. Health education program 54 should be included as a part of job – description of various categories of health personnel. The nurse as an administrator also should plan the out-reach activities in collaboration with the other agencies in imparting

the knowledge to the community. Programme to be planned to away from tuberculosis patient. Always cover your mouth with a tissue when you cough or sneeze. Tuberculosis patient should not visit other people and don't invite to others to visit the patient unnecessary rather than treatment.

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