Sociodemographic Factors Affecting the Cognitive on Tuberculosis in Jaunpur, Uttar Pradesh, India

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ABSTRACT

Background: Tuberculosis (TB) is a highly infectious disease that is responsible for millions of deaths annually across the whole world. The disease is caused by infection with Mycobacterium tuberculosis bacteria. It can spread through the air when a person with TB disease of the lungs or throat coughs, sneezes, speaks or sings releases these bacteria with numerous tiny droplets in the air and people nearby breathe in these bacteria and become infected. TB usually affects the lungs, but it can also affect other parts of the body like the kidney, spine, brain, and many other parts. The present study includes to estimate of the role of many sociodemographic determinants on tuberculosis among the general population of different age groups belonging to both rural and urban areas of district Jaunpur, Uttar Pradesh.

Methods: A study was done by using a standardized structured questionnaire including various sociodemographic variables such as age, weight, residential area, and worker type like farmers, unemployed, skilled, and nonskilled workers. Data was collected by a random survey of tuberculosis-affected individuals and then data analysis was done to see the effect of chosen sociodemographic variables on the prevalence of the disease tuberculosis.

Results: Most affected age group found in the study was 41 to 50 years and young individuals were found at higher risks also. In the case of weight, about 62% of total affected individuals were found underweight category while very less individuals were found belonging to the normal weight category. Further out of the total individuals most affected were approximately 74% from rural areas while the remaining belonged to urban areas. On the basis of occupation, it was found that out of four categories taken in my study as farmers, unemployed, skilled, and nonskilled workers, the percentage of affected individuals was approximately 18.4%, 20.4%, 29.6%, and 31.7% respectively.

Conclusion: Tuberculosis remains one of the most fatal diseases from ancient times responsible for the highest level of mortalities next to HIV. The government is continuously trying to control the disease by making and issuing various plans and guidelines for this global burden of tuberculosis. Many more efforts are still required for its control. This study reveals that sociodemographic factors play a key role in the prevalence as well as the spread of the disease. It is today's need to update all health professionals, policymakers, patients, and the general public about current trends in the management of tuberculosis and its rapid control.

Keywords: Tuberculosis; Infectious; Spread; Lungs; Sociodemographic determinants; Mortality; Prevalence.

1. Introduction

Tuberculosis (TB) is a highly infectious disease caused by infection with Mycobacterium tuberculosis bacteria. It spreads through the air when a person with TB disease of the lungs or throat coughs, sneezes, utters, sings, and releases millions of germs in the air, and people close to such infected person breathe in air with these bacteria and get infected. TB mainly affects the lungs, but it can also affect other parts of the body, such as the kidney, spine, brain, and many other organs. It is not necessary for every person infected with TB bacteria to become sick. People who have latent TB infection have the TB bacteria in their bodies but are not sick and cannot spread the bacteria to others. Individuals with active TB disease get ill and can transmit the bacteria to others. Many people with latent TB never develop active TB disease. In people with reduced immune systems, generally having HIV infection, the risk of developing TB disease is much higher than for those with normal immune systems. Both latent TB infection and active TB disease can be treated. Delayed treatment and latent TB infection can lead to TB disease, and without correct treatment, TB disease may prove fatal. National Institute of Health, January 2020.

The World Health Organization seeing the growing trend of the TB burden, in the assembly of 1991 declared tuberculosis as a global catastrophe. Then provided the background for controlling the disease and achieving the
objectives by introducing the DOTS approach. The availability of free diagnostic and treatment services and detection through sputum smear microscopy experiments at all levels of the nation’s health care were the main support for the implementation of this strategy. Fereshteh Farzianpour et al., 2016. The bacteria Mycobacterium tuberculosis infects approximately one-third of the population, about 1.9 billion people worldwide each year. There are 8 million new cases of Tuberculosis with 3 million deaths. This death comprises about 25% of all available deaths in developing countries. Three-fourths of the TB cases in developing countries occur among the economically productive age group i.e., 15 to 50 years of age. Growth rates of TB infection are highest where people are living in poor, unhygienic, and overcrowded conditions. South East Asia is mostly affected by this disease. According to a report by WHO about 39% of all TB cases worldwide are contributed by different countries in South East Asia where 95% of TB cases are reported from India, Indonesia, Myanmar, and Thailand.

A total of 1.6 million population had died from TB in the year 2021 (comprising 187,000 persons with HIV). TB is the 13th leading cause of death and the second leading infectious killer after COVID-19 (above HIV and AIDS) globally. In the year 2021, approx. 10.6 million people get ill with tuberculosis all over the world including Six million men, 3.4 million women, and 1.2 million children. TB is spread in all countries and age group people. Finishing the TB epidemic by 2030 is the main aim among health targets of the United Nations Sustainable Development Goals (SDGs). Around 5–10% of people infected with TB finally get symptoms and develop TB disease. Those infected but not ill with the disease cannot transmit it to others. For the prevention of TB Bacille Calmette-Guerin (BCG), the vaccine is given to babies or small children. It minimizes TB outside of the lungs but not in the lungs. Various symptoms are shown by TB patients like constant cough (in severe cases with blood), pain in the chest, weakness, fatigue, loss of weight, repeated fever, and night sweats. The symptoms depend on the affected organs inside the body. TB occurs in various different parts of the world. In 2021, the largest number of new TB cases occurred in WHO’s Southeast Asian Region (46%), followed by the African Region (23%) and the Western Pacific (18%). Approximately 87% of new TB cases are detected in the 30 high TB burden countries, with more than two-thirds of the total in all over the world including Bangladesh, China, the Democratic Republic of the Congo, India, Indonesia, Nigeria, Pakistan, and the Philippines. WHO Tuberculosis Report 21 April 2023.

If we discuss about scenario of TB at the country level approximated mortality out of all forms of TB was 37 per 100,000 population (34-40 per 100,000 population) in 2020. TB can affect anyone, regardless of age or sex The highest burden is in adult men, who comprise 56% of all TB cases in 2020; adult women accounted for 33% and children for 11%. The higher burden of TB cases among men is related to validation from national TB prevalence surveys, which show that TB disease influences men more compared to women, Global TB Report 2021. A slight increase has been recorded in the mortality rate including various forms of TB between 2019 and 2020 by 11% in India. The total number of evaluated deaths from all forms of TB except HIV cases for 2020 was 4.93 lakhs (4.53-5.36 lakhs) in the country, which was 13% higher than that of the year 2019. India TB Report 2022.

To motivate community participation and partnership Smt. Droupadi Murmu, Hon’ble President of India on 9th September 2022 launched the “Pradhan Mantri TB Mukt Bharat Abhiyaan (PMTBMA)” to provide persons affected with TB and their families additional nutritional, diagnostic, employment-based support, provided by the community. A huge response has been seen for this initiative from its initial launch. As of 1st January 2023, more
than 58,000 Nî-kshay Mitras (donors) have come forward and are dedicated to supporting more than 9 lakh authorized persons affected with TB. Tremendous participation from all States/UTs has been seen along with Political leaders, Ministers, MP’s, Elected Representatives, Government officials, NGOs, and many other big federations coming forward and regulating various events to proliferate awareness about the PMTBMBA initiative, India TB report 2023. The government of India has built up attempts to attain its determined goal of TB eradication by 2025. The latest effort PMTBMBA is an important step for community involvement to support TB patients. Nutritional supplements will help a lot in attaining better treatment outcomes and finally help in reducing the rate of mortality (Sankalp Yadav et al., 2022). Many institutions are working for the eradication of this dreadful disease globally and are achieving success up to a great extent Still there are so many attempts to do so for the achievement of the higher goal of destruction of the disease. The effect of TB on society and all over the country is such a manner that it affects the National Economy at a much higher level mainly because of a decreased workforce. This leads to lower per capita income and a lower GDP (Gargi et al., 12 October 2020).

2. Materials and Methods

For the authentication of the present study, I have considered different regions for the survey in the Jaunpur district. A total of 98 TB patients were interviewed through a pretested, organized questionnaire using subjective sampling techniques. Besides total records of patients were also taken from clinical and radiological diagnoses to collect qualitative and quantitative figures. The study was conducted in many different regions of the district Jaunpur Uttar Pradesh, mainly a rural river basin. The study used a variegated methods strategy, i.e., both qualitative and quantitative modes for data collection, as it helped provide information as per the objectives of the study. Data analysis was done to determine the effects of chosen socio-demographic factors on TB prevalence. Under the quantitative section, a varied region study was conducted on the general public using a validated structured questionnaire. The qualitative section included focused group discussions. The survey done for this study is random. During group discussions, I found information by communicating with them about their disease duration, available medical facilities, family status, and living and working areas for the collection of enough information from their side.

3. Results

Factors associated with the prevalence of TB can be of various types some of which considered in my study were age, weight, residential area of the respondent either rural or urban, and worker type farmer, skilled worker, nonskilled worker, or unemployed. Understanding the factors associated with TB-specific deaths may provide help in easily understanding different causing factors of the disease and making many important decisions for eliminating this disease at the global level, therefore I aimed to identify general characteristics associated with TB-specific mortality among the population in Jaunpur, a district in eastern zone of U.P. Because less work has been done on this disease in this region. All of the determinants considered in my study and their related findings can be discussed as:

Out of 98 sample sizes, the respondents included 58% males and 38% females. In terms of age percentage individuals found belonging to different age groups were as follows:
The higher rates of TB among old age people have been attributed to a higher prevalence of infection among them because of weak immunity. These results are shown in the graph above. In elderly people, chances of infection are higher leading to death mostly. The most productive age group (31-50 years) was found highly affected.

As regards weight, it was found that out of the total patients, 61.22% were found in the underweight category while 38.78% were found under the normal weight category.
Regarding residing areas including rural and urban, it was found that 73.47% of patients were from rural areas while 27.55% were from urban areas.

Further analysis was done on the basis of the occupation of the patients which was categorized as farmers, skilled workers, nonskilled workers, and unemployed. Occupation-wise among the total patients farmers were 18.37%, Skilled workers 29.59%, nonskilled workers 31.63%, and unemployed 20.41% were found infected with tuberculosis.

4. Discussion

Age factor in tuberculosis is an important factor, in the elderly population, different factors play a role in making TB a particular issue. Regarding TB incidence according to age, the group with the highest number of TB cases has an age range of 25 to 54 years. Many physiological changes occur with aging, such as a decrease in the elastic recoil of the lung, a decrease in the amenability of the chest wall, and a decrease in the strength of respiratory muscles. Malnutrition, also usually found in aged people, may lead to skeletal muscle atrophy and respiratory muscle dysfunction (Pauline Carauch-Paz et al., Dec 2021).

Tuberculosis patients usually suffer from drastic weight loss, which is considered to be responsible for immunity weakness and a major factor responsible for the disease. Because leptin is involved in weight regulation and cellular immunity, its possible role in tuberculosis-associated wasting was investigated (Reinout van Crevel et al., February 2002).

The burden of TB disease is usually higher in urban areas than in rural settings because of overcrowding, high HIV occurrence, and migration for occupational purposes. Health care service facility is better in urban populations because of easy to reach while rural patients must travel long distances to get the same facility. Another thing is that urban settings have more skilled healthcare providers with more clinical experience in the management of TB and HIV and access to better diagnostics (Simon Mutembo et al., 30 Dec 2019). Rural residents work as a risk factor for late diagnosis because of hard access to healthcare facilities and usually lower education levels as compared to urban areas (Mpungu Kiwuwa et al., 24 Nov 2005). Higher educated and urban area individuals were comparatively well educated about TB infection. Patients with better knowledge of TB were also more careful in seeking a
diagnosis of their disease (M.N.I. Mondal et al., 2014). As regards the monthly income, it was found that out of the total surveyed individuals from different zones in district Jaunpur, 28% were found under the APL category while 72% were from BPL family status, which means that poverty supports T.B. very strongly (Rani Asha 2023).

Skilled workers generally get good space and environment for work like in factories, shops, workshops, agencies, or some large area where they get a closed, maintained, and specific environment but semiskilled and nonskilled workers usually work in congested and more polluted environments like persons who work in an open roadsides, garbage sites, construction sites, chimneys, transportations and likewise many other highly polluted environments where pollution affects their respiratory system and overall health very badly.

5. Conclusion

The above results revealed that sociodemographic factors such as age, weight, living area either rural or urban, and type of worker as farmer, skilled, nonskilled, and unemployed considered in my study are significantly associated with the occurrence of the disease. In my study higher age group people were found at higher risk of TB compared to others, per my opinion this may be because of very weak immune responses by their body, living in improper hygienic conditions, undernutrition, less access to health care facilities and less caring by family members, etc. Other than that Tuberculosis and body weight affect directly each other because if the person has T.B. he starts to lose weight and if any person is weak physically because of any other reason either disease or malnutrition then he is more prone to infection by tuberculosis, we can say that there is a direct relation between weight and tuberculosis and both affect each other strongly. Occupation and residential areas also play important roles for a person as they create good or bad conditions regarding environmental conditions, good or bad hygiene, and pollution levels.

Declarations

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This study did not receive any grant from funding agencies in the public or not-for-profit sectors.

Conflict of Interest

The authors declare that they have no conflict of interest.

Consent for Publication

The authors declare that they consented to the publication of this study.

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