

Comparative Study on Profiles of Tuberculosis Patients in Madhya Pradesh

By

Prashansa Mehra

*Dissertation submitted for the partial fulfillment of the
MBA Hospital and Health Management*

Academic year, 2016-2018



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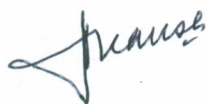
TO WHOMSOEVER MAY CONCERN

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The Candidate has successfully carried out the study designated to him during internship training and his approach to the study has been sincere, scientific and analytical.

The Internship is in fulfillment of the course requirements.

I wish him all success in all his future endeavors.



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Date: 3/5/2018

Appendix E

Certificate of completion of Internship/dissertation for the duration of at least three months from the organisation.

The certificate is awarded to

Dr. Prashansa Mehra

In recognition of having successfully completed her
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We wish her all the best for future endeavors

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CERTIFICATE BY SCHOLAR

This is to certify that the dissertation titled Comparative Study on profiles of tuberculosis patients in Madhya Pradesh and submitted by Dr. Prashansa Mehra Enrollment No 0468 under the supervision of Dr. Ranjan Kumar Prusty, THE IIHMR UNIVERSITY, Jaipur for award of MBA in Hospital and Health management of the University carried out during the period from 2016 to 2017 embodies my original work and has not formed the basis for the award of any degree, diploma, associate ship, fellowship, titles in this or any other institute or other similar institution of higher learning.



Signature

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Sincerely

Dr. Prashansa Mehra

Student- MBA HM 21

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ABBREVIATIONS

TB	Tuberculosis
NSP	National strategic plan
PMDT	Programmatic management of drug resistant TB
RNTCP	Revised National Tuberculosis Control Programme
DMC	Designated Microscopy Centre
TU	Tuberculosis Unit
SDGs	Sustainable Development Goals
WHO	World Health Organization's
UN	United Nations
MDR	Multi drug resistant
DOTS	Directly Observed Treatment Short course

Background

India rank 2nd in world after Africa having maximum tuberculosis patients, with 2.3 million new cases every of tuberculosis and Madhya Pradesh ranks 3rd with 1, 31,828 after Maharashtra.

Structure of RNTCP programme

The TB delivery chain has three components: finding patients with symptoms of TB (case-finding), determining if the suspected case has the disease (diagnosis), and delivering 6-9 months of treatment. While the RNTCP (NTP in short) nominally owns the entire chain, it relies significantly on the state public health system (PHS) to execute delivery of services. The NTP directly executes only diagnosis through Designated Microscopy Centers (DMCs) in public hospitals. It relies on government physicians in the outpatient department (OPD) to find suspected cases, and on ANMs (Auxiliary Nurse Midwife) and ASHA (community health workers) – both PHS personnel – to deliver drugs. The RNTCP's role in these delegated functions is to train, supervise and monitor now the new initiative for TB positive case giving nutritional support by giving 500 Rs to the patient who has started treatment on or after April 2018 till the completion of treatment.

Tuberculosis is a communicable disease and its spread depends on risk factors that includes low immunity of a person, males are affected more than females, HIV positive patients, and vulnerable population. To achieve a target of eliminating tuberculosis from India by 2025 we need to more focused on RNTCP programme, increase the active case finding, CBNAAT test in all the districts for early detection of TB and proper monitoring and tracking of patient with the help of e- nikshay or 99 dots and proper counselling of patients medicines side effects.

Introduction

Tuberculosis (TB) is an infectious disease caused by a Bacterium, *Mycobacterium tuberculosis*. It spreads through the air by a person suffering from TB. One positive patient infect 10 to 15 people in a year.

Now the new concept of daily regimen according to the patient weight has been introduced. The treatment should be taken without interruption for 6 to 9 months. Because of such a long duration of treatment & other problems such as poverty and unemployment many TB patients do interrupt the treatment.

India has been engaged in Tuberculosis (TB control activities for more than 50 years). Most of the cases remain undiagnosed, missing or not notified in India. This tragic loss of life, continued suffering, poverty need to end with concerted efforts from all of us. There has been recent advanced and effective interventions and technologies for diagnosis, treatment and care of TB.

This NSP for 2017– 25 for TB elimination in India (NSP) embraces these opportunities to leverage its full potential and proposes transformational changes to TB care service delivery.

Over the last NS period, we made significant gains in strengthening the support structures, programme architecture and implementation environment for TB control. This includes mandatory notification of all TB cases, integration of the programme with the general health services (National Health Mission), expansion of diagnostics services, and programmatic management of drug resistant TB (PMDT) service expansion, national drug resistance surveillance and revision of partnership guidelines. However, we have to recognize that more needs to be done to drastically reduce the TB incidence in India. We need aspirational objectives, a thoughtful and structured approach and a supportive environment. The NSP 2017-2025 builds on the success and learnings of the last NSP and encapsulates the bold and innovative steps required to eliminate TB in India by 2030. It is crafted in line with other health sector strategies and global efforts, such as the draft National Health Policy 2015, World Health Organization's (WHO) End TB Strategy, and the Sustainable Development Goals (SDGs) of the United Nations (UN)

For TB to be eliminated the NSP 2017-2025 the activities of all stakeholders including the national and state governments, development partners, civil society organizations, international

agencies, research institutions, private sector, and many others whose work is relevant to TB elimination in India. The NSP 2017-2025 which builds on the success and learnings of the last NSP, and articulates the bold and innovative steps required to move towards TB elimination. It provides goals and strategies for the country's response to the disease during the period 2017 to 2025 and aims to direct the attention of all stakeholders on the most important interventions or activities that the RNTCP believes will bring about significant changes in the incidence, prevalence and mortality of TB . These strategies and interventions are in addition to the processes and activities already ongoing in the country . As a strategic document, the subsequent operational plans will necessarily follow . This NSP replaces previous strategies, and will inform and guide the technical and operational guidelines refresh and associated programme tools modifications .

RNTCP Programme in Madhya Pradesh

The State of Madhya Pradesh was covered under RNTCP to provide services as per RNTCP guidelines from Central TB Division, Govt. of India, New Delhi, by December 31st 2004 .

In order to achieve this, each district has a district TB centre. 158 Tuberculosis Units (TUs) and 756 Designated Microscopy Centers (DMCs) have been established for effective management of RNTCP. More than 3000 Medical Officers, 1000 laboratory technicians, 17000 health care workers and other community volunteers have been trained . The Designated Microscopy Centers have been upgraded, established and fitted with binocular microscopes since the inception of the RNTCP to provide easy and universal access to diagnosis and treatment facilities for suspected Tuberculosis patients . About fourteen thousand treatment observation points have been established to facilitate directly observed treatment nearest to the patients . Publicity and IEC of the programme providing treatment for tuberculosis patients has been taken to grass root level to apprise the community of the facilities under RNTCP . New intervention has been introduced by ICMR, Jabalpur in tribal district of Madhya Pradesh providing diagnostic van(x ray and sputum microscopy) for the villages that do not have access to health facility or the villages that includes high risk population .

Literature Review

Tuberculosis in tribal areas of Madhya Pradesh is biggest reason for death because of lack of facilities, awareness and rituals in these areas. The certain risk groups: young adults (more commonly males), those in developing countries, health care workers who are dealing with positive cases, and whose immune systems are weak, as in those who have HIV or smoking habit. In HIV positive patients TB is the cause of death .

Global scenario of tuberculosis

In 2016, there were an estimated 10.4 million new TB cases worldwide, 10% of which were people living with HIV . Seven countries accounted for 64% of the total burden, with India bearing the brunt, followed by Indonesia, China, Philippines, Pakistan, Nigeria and South Africa .

An estimated 1.7 million people died from TB, including nearly 400 000 people who were co-infected with HIV. This is a drop by 4% compared to 2015 .

Multidrug-resistant TB (MDR-TB) remains a public health crisis and a health security threat. WHO estimates that there were 600 000 new cases with resistance to rifampicin – the most effective first-line drug, of which 490 000 had MDR-TB. Almost half of these cases were in India, China and the Russian Federation .

Prompt action towards universal health coverage and social protection, as well as breakthroughs in research and innovations – will be critical to enable access to patient-centered care of the highest standards for all, especially the poorest, most disadvantaged people everywhere

Directly observed treatment-short course (DOTS) is an internationally recognized strategy for delivering the basics of TB case-finding and cure . It is not simply a clinical approach to patients, but rather a management strategy for public health systems, including political commitment, case-detection through quality-assured bacteriology, short-course chemotherapy, ensuring patient adherence to treatment, adequate drug supply and sound reporting and recording systems. Worldwide, between 1995 and 2008, a cumulative total of 36 million TB patients were successfully treated in DOTS programs, and up to 6 million deaths were averted . The treatment

success rate (~86%) achieved in DOTS cohorts worldwide exceeded the global target of 85% for the first time in 2007 .

About 3.6 million persons are estimated to be living with HIV/ AIDS in SEAR. This region is distinguished by a complex, heterogeneous HIV epidemic at different stages, both within countries and across the region .

Persistent gaps in care and financing

Tackling the epidemic requires action to close gaps in care and financing. It also requires progress in a particular subset of high TB burden countries .

- Underreporting and under diagnosis of TB cases continues to be a challenge, especially in countries with large unregulated private sectors and weak health systems . Of the estimated 10.4 million new cases, only 6.3 million were detected and officially notified in 2016, leaving a gap of 4.1 million. India, Indonesia and Nigeria accounted for almost half of this global gap .
- Only one in five MDR-TB cases were started on treatment. India and China accounted for 39% of the global gap. Treatment success remains low, at 54% globally .
- Of the almost half a million reported cases of HIV-associated TB, 15% were not on antiretroviral therapy (ART) as recommended by WHO. Most of the gaps related to HIV-associated TB were in the WHO African Region .
- TB preventive treatment is expanding in two priority risk groups - people living with HIV and children under 5 years. However, most people eligible for TB preventive treatment are not accessing it .

Shortfalls in TB funding are one of the main reasons why progress is not fast enough to be on track to reach the end TB targets. "We have a double challenge More domestic funding is needed in middle-income countries, and more international donor support is needed to support low-income countries .

Ministerial conference on ending Tb

The ten countries were: India, Indonesia, Nigeria, the Philippines, South Africa, Pakistan, Bangladesh, the Democratic Republic of the Congo, China and the United Republic of Tanzania .

Indian Scenario

In India, TB has been mentioned in the *Vedas* and the old *Ayurveda* scriptures . Historically speaking, fight against TB in India can be broadly classified into three periods: early period, before the discoveries of x-ray and chemotherapy; post-independence period, during which nationwide TB control programs were initiated and implemented; and the current period, during which the ongoing WHO-assisted TB control program is in place.

District TB program

In 1961, District Tuberculosis Program was prepared by the Indian government, and Anantapur district in Andhra Pradesh state was the first model district TB center (DTC) . This program was aimed at integration of TB control schemes with the existing government health services to reduce the TB problem in the community as economically as possible . Shortly after establishing the Anantapur DTC, it became evident that although case-finding could be done at any place without difficulty, the major problem in the fight against TB was that of keeping the patients on continuous treatment until cure was achieved . Using this district TB center model, in 1962, the Indian government launched the National TB Control Program (NTCP) .

CURRENT CHALLENGES

Even today in India, two deaths occur every three minutes from TB . Major challenges to control TB in India include poor primary health-care infrastructure in rural areas of many states; unregulated private health care leading to widespread irrational use of first-line and second-line anti-TB drugs; spreading HIV infection; poverty; lack of political will; and, above all, corrupt administration. A collaborative effort is in progress between NTCP and National Rural Health Mission (NRHM), which is a reform initiative of which the goal is to improve primary health care in rural areas . In addition to this, NTCP has established several initiatives in coordination with the private sector and the Indian Medical Association (IMA) to improve TB care .

Surprisingly, in India, people are still under the impression that TB is a disease of poor people, mostly of those living in slums . The rich and affluent persons need to know that their cooks/servants/drivers can be asymptomatic carriers of this deadly disease, right in their mansions, and hence they can potentially get infected with TB even without stepping into these slums . The

consumption of unpasteurized milk or dairy products made from raw milk is another potential source of TB for humans, as there is ample evidence that bovine TB (*Mycobacterium bovis*) gets transmitted to humans .

5.1 Objective

To compare the socio demographic profiles of tuberculosis patients in Barwani District, Madhya Pradesh.

Specific Objective

1. To evaluate the trend analysis of TB patients from year 2014 to 2018 year
2. To analyze the tb treatment outcome for proper monitoring of patients and also the effectiveness of Rntcp programme year 2014- 2017

Study Area

Barwani district is one of the districts of Madhya Pradesh state of India ranks third in relation to tribal population”.” The administrative headquarters of the district is at Barwani. Barwani district has an area of 5,427 km² and a population 1,385,881 (2011 census) . The district lies in the southwestern corner of Madhya Pradesh; the Narmada River forms its northern boundary . The Satpura Range lies to its south. The district is bordered by Maharashtra state to the south, Gujarat state to the west, Dhar District to the north and Khargone District to the east .

The district is divided into two sub-divisions, Barwani and Sendhwa, which are further divided into tahsils, Barwani, Sendhwa, Pansemal, Warla (Varla) Niwali, Thikri, Pati, Anjad and Rajpur, and seven developmental blocks, Barwani, Pati, Sendhawa, Pansemal, Niwali, Thikari and Rajpur.

The four Vidhan Sabha constituencies in this district are Pansemal [Pansemal Tehsil+Niwali Tehsil], Barwani [Barwani+Pati], Sendhwa [Sendhwa Tehsil] and Rajpur [Rajpur+Anjad+Thikari+Balsamud] . Barwani, Sendhawa, Pansemal and Rajpur assembly constituencies are part of Khargone Lok Sabha constituency .

District has 417 panchayats and 715 villages, 646 revenue and 69 forest. Out of these villages, 560 are inhabited and 16 are un-inhabited. The two municipalities in this district are Barwani and Sendhawa .



BARWANI TEHSIL MAP

The map displays the following villages and their approximate locations:

- Barwani** (Central)
- Pat** (Northwest)
- Angul** (Northeast)
- Thakri** (Northeast)
- Patel** (Southwest)
- Shiv** (South)
- Shivdada** (Southeast)
- Thakri** (South)

Legend:

- State Boundary
- District Boundary
- Tehsil Boundary

Scale: 0 10 20 30 40 50

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AREA 5,427 km squares

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6. Methodology

Data has been used from e- nikshay portal of government of India

6.1 Research Design: - This study design uses Analytical

6.2 Sample size: - Total positive Tb cases notified in public hospital year 2016 (1682) and 2017(853)

For trend analysis cases from 2014 to 2017(3000, 2200, 1682, 853)

6.3 Data collection procedure: - e- nikshay portal of Barwani district

List of entries done in nikshay portal

6.4 Data analysis:

MS-Excel: - Methods used in excel are:- percentage calculation showing with pie charts, bar graphs and trend graphs.

NIKSHAY- Government OF INDIA initiative for monitoring of Tb patients. A web based solution for monitoring of TB patients. This is used by health functionaries at various levels across the country in association with Central TB Division (CTD), Ministry of Health & Family Welfare . NIKSHAY covers various aspects of controlling TB using technological innovations . Apart from web based technology, SMS services have been used effectively for communication with patients and monitoring the programme on day to day basis .

Types of tuberculosis:-

1. Pulmonary tuberculosis (tb in lungs)
2. Extra pulmonary tuberculosis (tb involving organs other than lungs and except nails, hairs and teeth)

Category of tuberculosis:-

Category I: - new case and treatment of duration 6 to 7 months

Category II:-old case or patient who has taken medicine earlier for more than 1 month, duration of treatment 8 to 9 months.

7. Result

7.1 Trends of TB cases in Barwani district year 2014 to 2017

- 1) Total number of positive patients enrolled in Barwani district (nikshay portal) year 2014- 3000 cases, 2015-2200 cases, 2016- 1682 cases, 2017- 853 cases, In 2014 patients were more compared to 2015 and year by year positive cases were reducing.

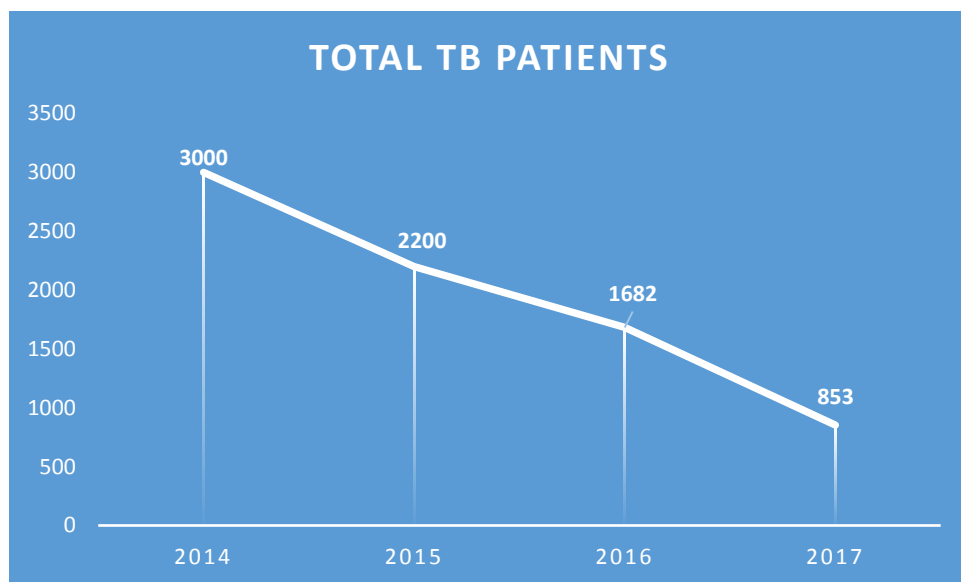


Figure 1: No. of patients from 2014 - 2017

7.2 Spatial Distribution

7.2.1 The **total no of tuberculosis patients** in Barwani year 2016 were 1682 and there percentage in 7 different blocks from which highest cases were in Rajpur tuberculosis unit in the year 2016 i.e. 31 % and .Sendhwa comes second in 2016 i.e. 23% while in 2017 both Rajpur and Pati have same no. of cases i.e.22%, 3 rd. comes the Pansemal and Barwani 17% in 2016 while in 2017 second block was Barwani and Pati tuberculosis unit have lowest TB positive cases i.e. 12% and least being in Pansemal in 2017.

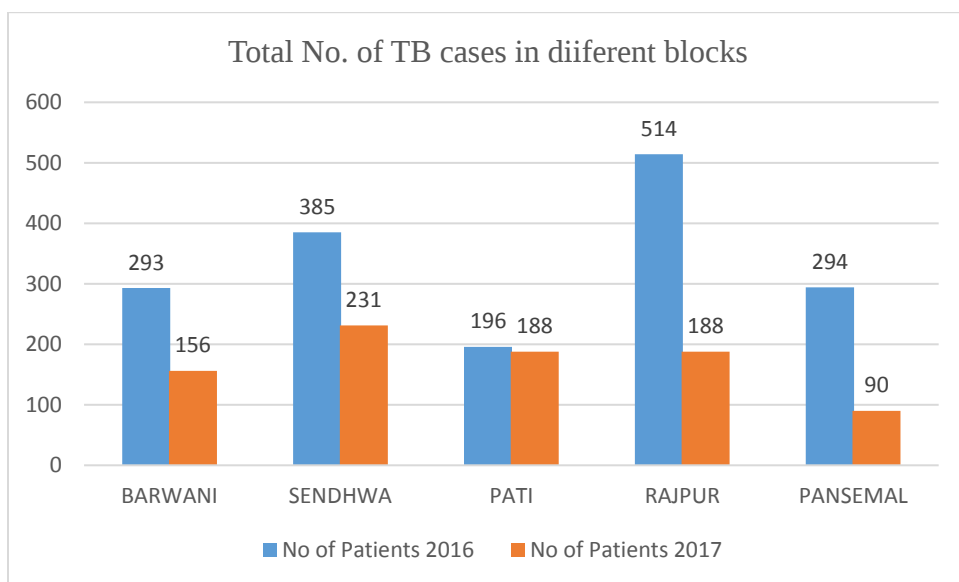


Figure 2: No of Patients based on TB unit

7.3 Socio Economic Differences

7.3.1 Gender

Out of total 1682 tuberculosis positive patients mostly were males i.e. 63% in 2016 and 58% out of 853 patients in 2017, very few were females both in 2016 and 2017 i.e.37% and 42 % resp.

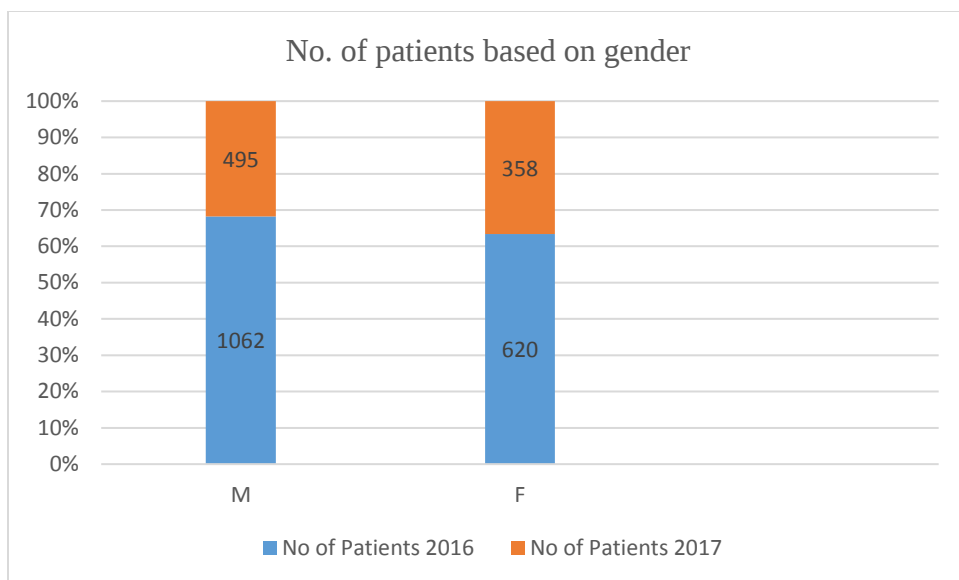


Figure 3: No. of Patients based on Gender

7.3.2 Age

The age in which TB cases were more is 21 to 30 years in both the years i.e.2016 and 2017 28% and 25% respectively, the second category of age interval is 31 to 40 years in which 22% cases in 2016 and 20% in 2017, next age interval is 41 to 50 years 21% cases in 2016 and only 20% in 2017, 51-60 years 12% in 2016 and only 11% cases reported in 2017.

Than 11 to 20 years 12% in both the years, above 60 very few cases were detected i.e.4% and 6% in 2016 and 2017 resp. According to WHO the high risk pediatrics population:-

2016	2017
0 to 4 =25	0 to 4 =24 cases
5 to 10=43	5 to 10=26
11 to 14=32	11 to 14=20

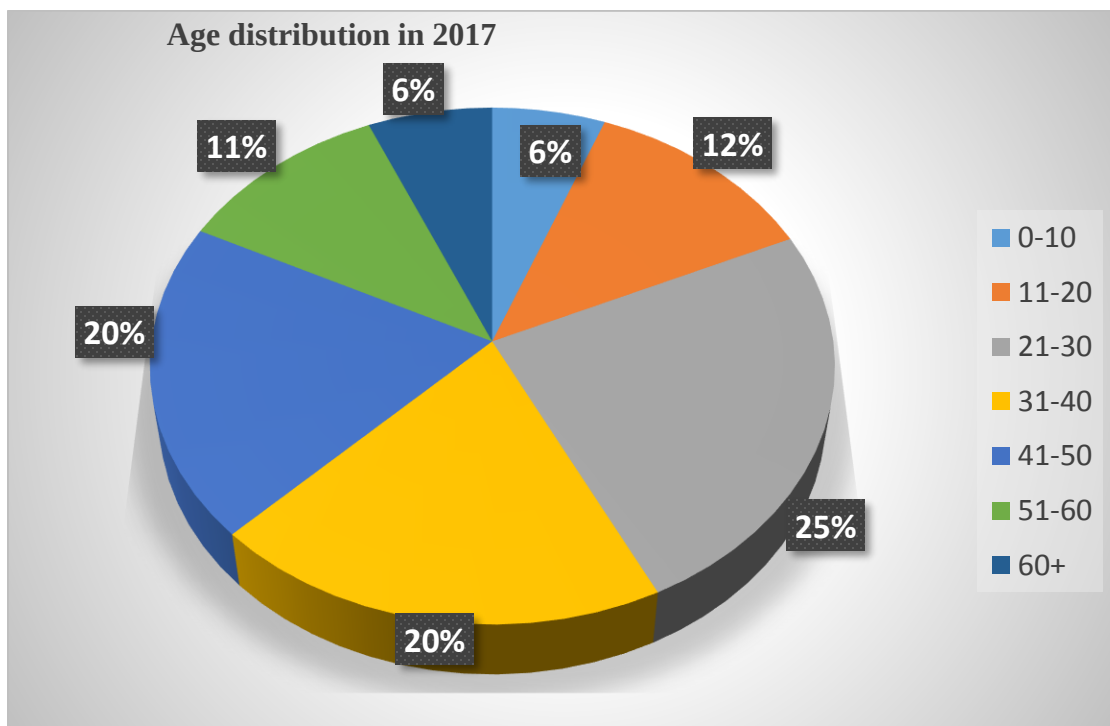
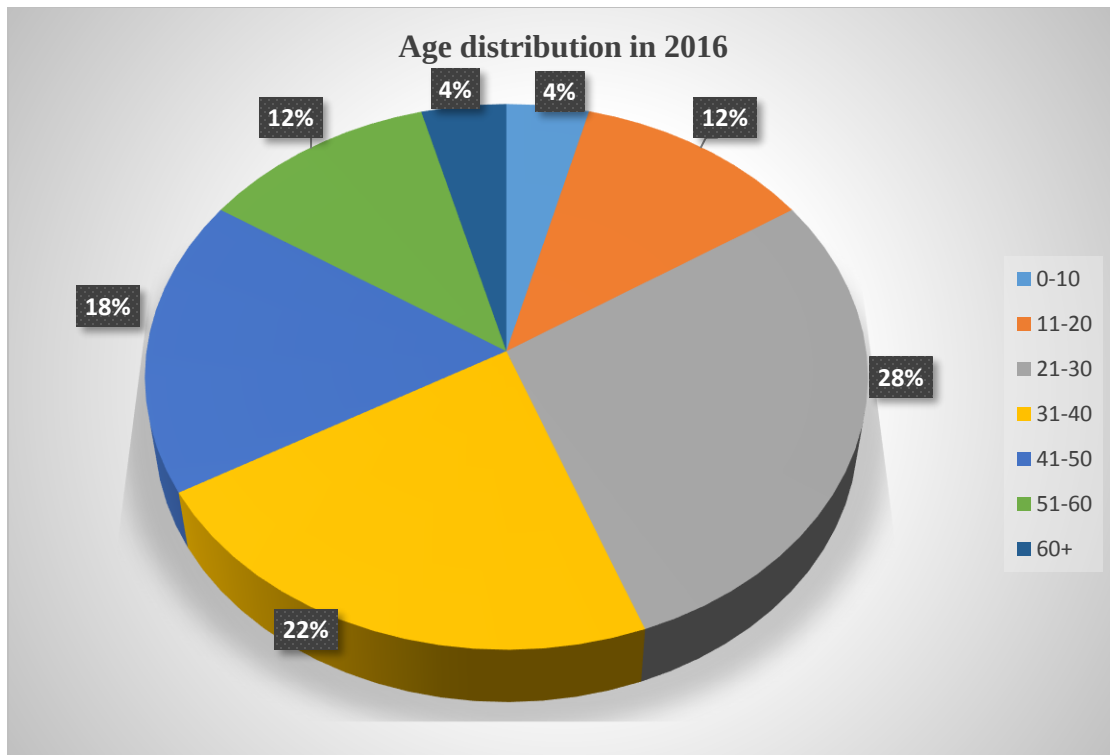


Figure 4: No. of Patients based on age group

7.4 Category of treatment

The most common category of treatment is category I (New case) 89% in 2016 and 91% in 2017, and very few were category II (old patient or the patient who has taken the medicines less than 1 month) i.e. 11% in 2016 and 9% in category II.

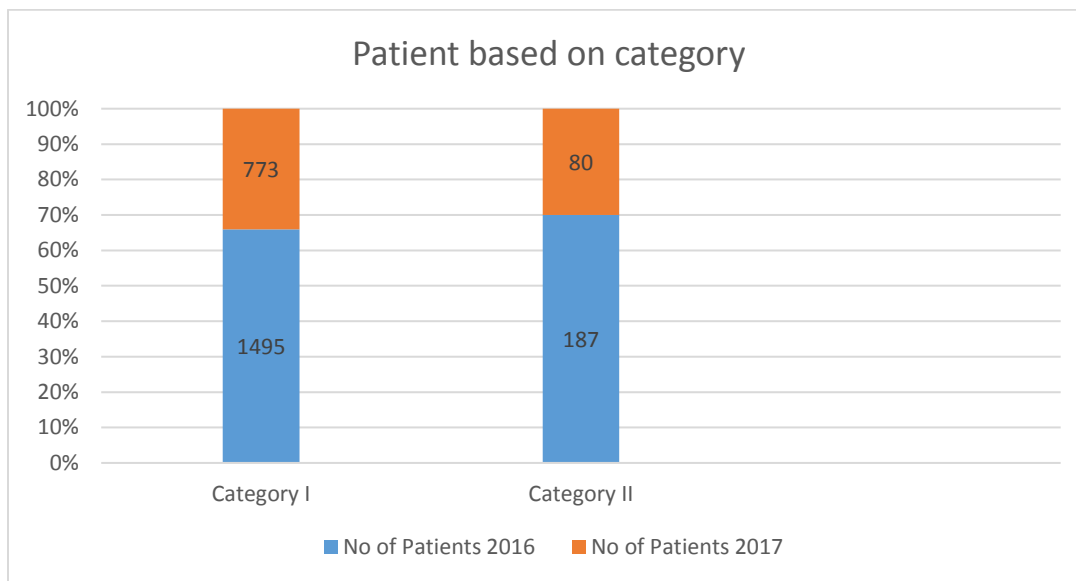


Figure 4: No of Patients based on category

7.5 Type of TB

Mostly the patients detected as pulmonary TB both in 2016 and 2017 i.e. 88% and 86 resp. Compared to extra pulmonary TB 12% in 2016 and 14% in 2017.

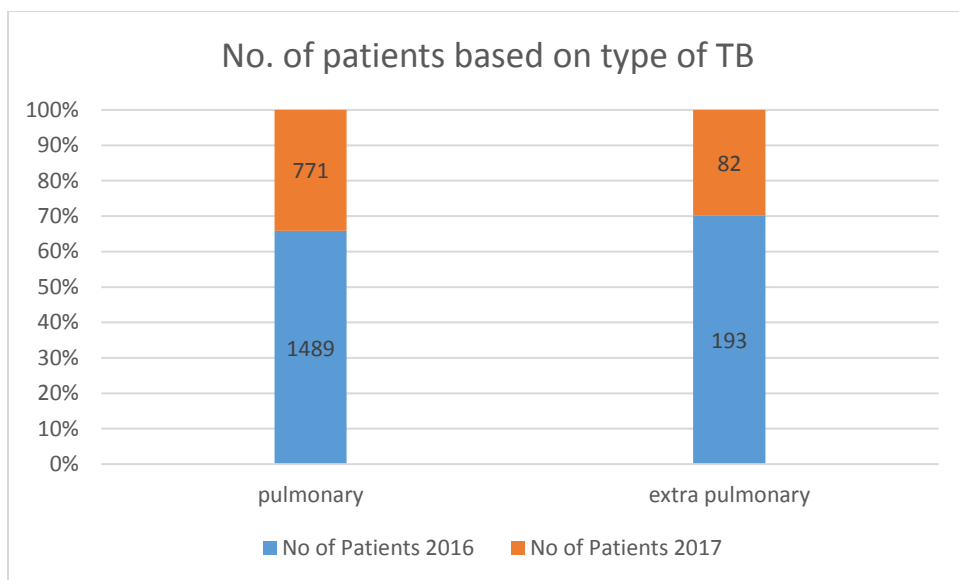
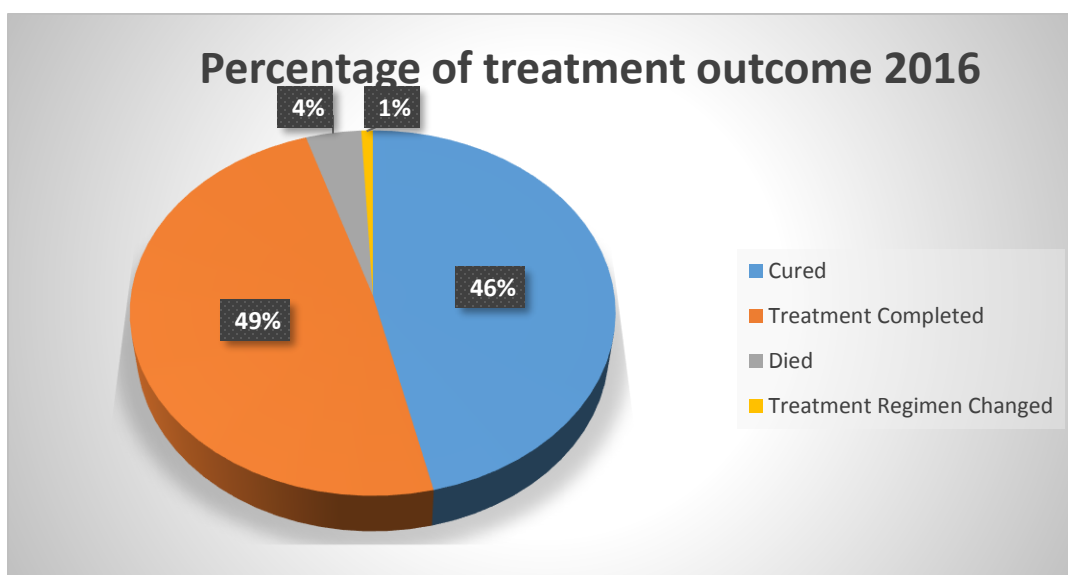


Figure 5: No. of Patients based on type of TB.

7.6 Treatment outcome

Based on treatment outcome mostly patients were completed there treatment 66% in 2017 and 49% in 2016, less than 50% patients were cured in 2016 and only 26% in 2017, very few patients were died both in 2016 and 2017 i.e. only 4% and 6 % resp. , treatment regimen changed 1% in 2016 and 2 % in 2017.



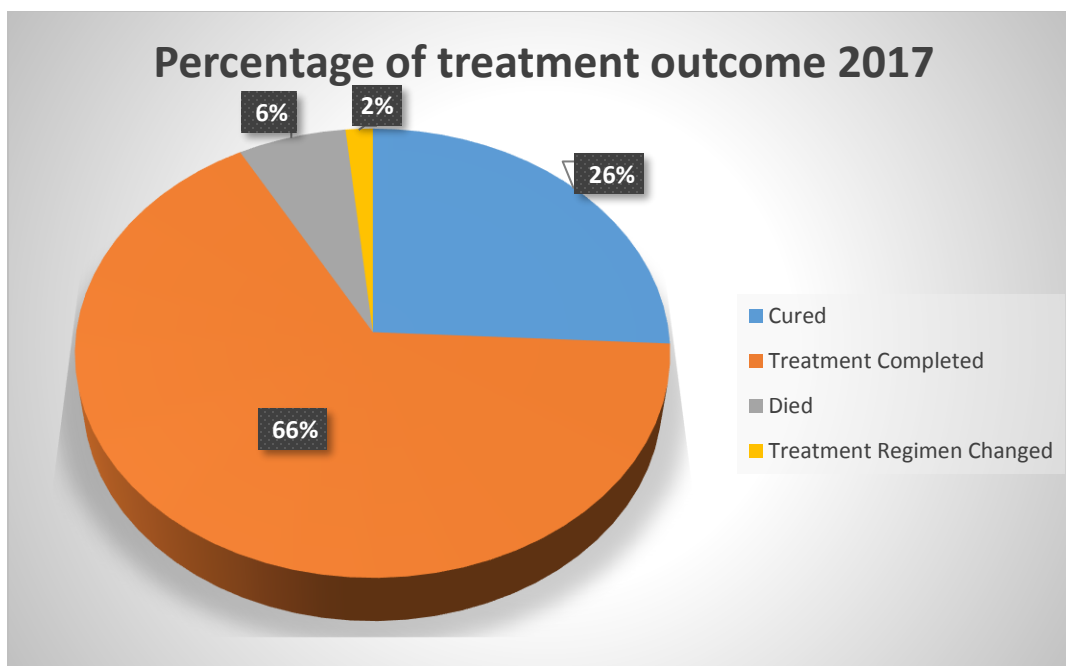


Figure 6: No. of patients based on treatment outcome

7.7 Treatment type

In 2016 New cases were 1495 compared to 770 in 2017, failures were very less in 2016 i.e.8 and only 1 in 2017, retreatment cases were 62 in 2016 compared to 27 in 2017, relapse cases were 89 in 2016 and almost reduces to half in 2017 i.e.44 and treatment after default were 28 in 2016 and only 8 patients in 2017.

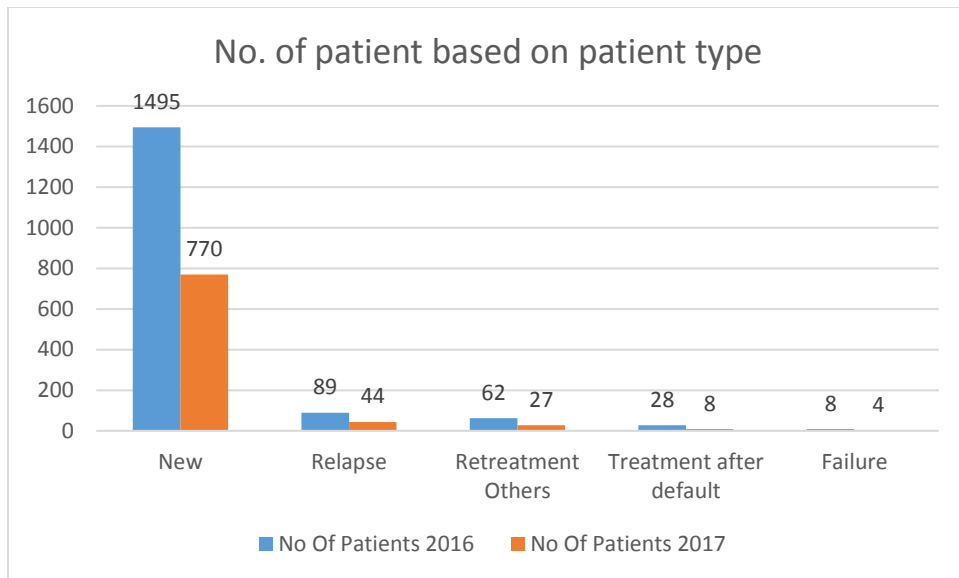


Figure 7: No. of patients based on patient type

7.8 Based on quality of data

Out of the total 853 patients 791 entries were missing this shows the poor quality of data, 93% data is missing in 2017.

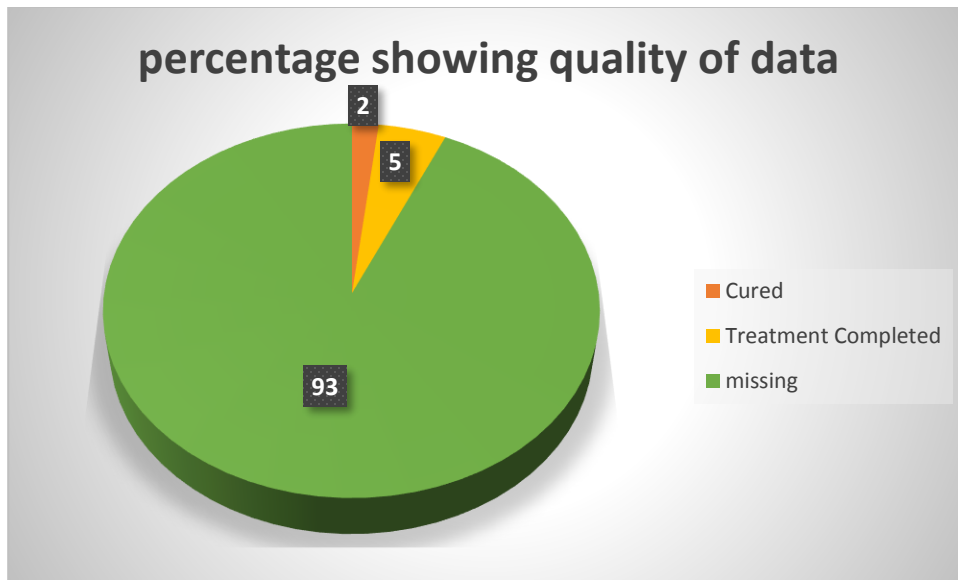


Figure 8: Quality of data

8. Findings

1. The trend shows decline in no. of TB cases from 2014- 2017.

In 2014 – 3000 cases

2015 - 2200

2016 - 1682

2017 - 853

2. As by analyzing we get to know that most vulnerable area of tuberculosis is Rajpur, so we need to focus on Rajpur more.

3. Males are more affected than females.

4. Category I cases are more that is no. of new cases are more rather than Category II and MDR cases.

5. Pulmonary TB is more than extra pulmonary TB.

6. The most affected age group is from 21 to 30 years i.e. 28 % in 2016 and 25 % in 2017.

7. Mostly the patient completed there treatment but they are cured or not we do not have data and also the patient who left the treatment and migrated to other states data is missing.

8. The quality of data is very poor means mostly the data is missing in year 2017

9. Suggestions

1. More active case finding.

2. NGOs technical support should be taken

3. More awareness campaigns should be conducted at least once a month in every panchayat.

4. Data entry should be proper and on time.

5. Data operator should be recruited for every TU.

10. Conclusion

There is gradual decrease in tuberculosis patient from year 2014 to 2017, so for elimination by 2025, we will focus more on vulnerable population and more active case finding and more and more awareness camp of tuberculosis.

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