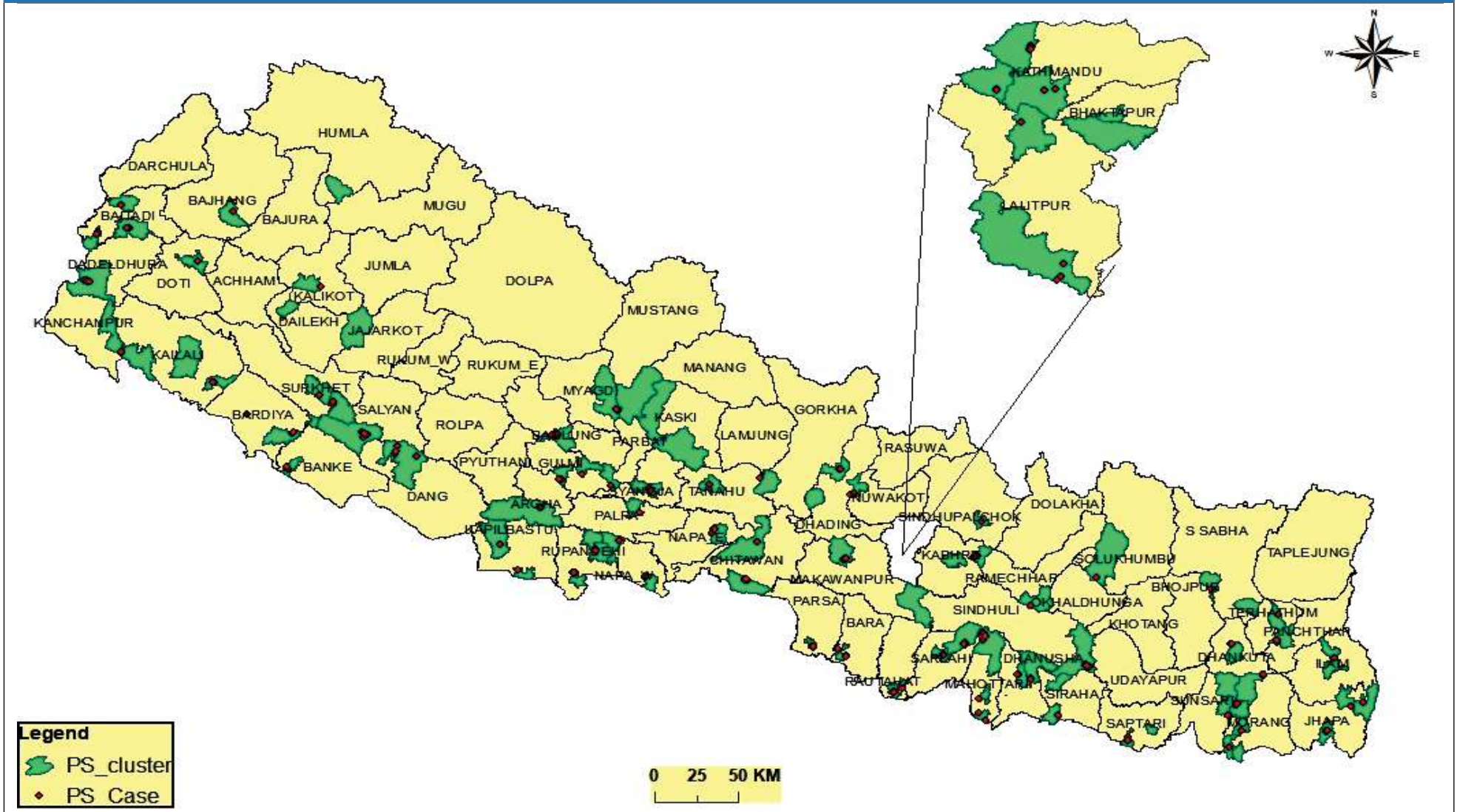
NATIONAL TB PREVALENCE SURVEY

2018/2019

NEPAL SUMMARY REPORT

Government of Nepal
Ministry of Health and Population
Department of Health Services
National Tuberculosis Control Centre
Thimi, Bhaktapur

TB Prevalance Survey Cluster with Identified Case



Spatial Data Source: Department of Survey, Minbhavan

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Hon. Bhanu Bhakta Dhakal

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Foreword

Tuberculosis remain as a public health challenge in Nepal. It is preventable and curable, however, large number of new Tuberculosis patients are registered and large number of deaths due to Tuberculosis are reported every year. It is unfortunate that most of the TB cases are seen in young and productive age groups (15-54 years). Long duration and high costs of treatment linked with its severe side effects, pose greater burden on household and national economy.

The Ministry of Health and Population (MoHP) is privileged to present the first National TB Prevalence Survey (2018 -2019) report. The survey was based on nationally representative sample covering 55 districts. It was paperless and had followed the international standard procedure and protocol suggested by the World Health Organization.

The survey has provided exact burden of disease and health seeking behaviour among TB patients. The actual burden of TB is estimated to be 1.6 times higher than previously thought. The survey findings calls for an innovative, effective and targeted response to achieve the END TB targets and Sustainable Development Goals (SDG).

I would like to take this opportunity to express my sincere gratitude to all staffs under Ministry, donor partners, technical and non-technical agencies and other contributors, which has been indispensable to the success of the survey.

March,2020

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Preface

It is our great achievement to carryout National TB Prevalence Survey in the country successfully. The Ministry of Health and Population is implementing TB prevention, control, management, care and support interventions at all levels in the country. The implementation approach and modalities are guided by the 5-year national strategy plan, prepared in line with the WHO END TB Strategy and Sustainable Development Goals (SDG). Since the adaptation of STOP TB Strategy in 2006, significant efforts and investment had been made to control and prevent from TB throughout the country and achieved the remarkable progress in the set indicators. However, the Ministry realized and envisioned to estimate the real burden of disease and make the realistic and evidence based plan to eliminate TB from the country and planned to carryout TB prevalence survey in Nepal.

National TB prevalence survey is the milestone in tuberculosis control history. The prevalence survey 2018-2019 is the first ever TB prevalence Survey of Nepal. The survey reserved the reputation of Government of Nepal among global tuberculosis community by maintaining the high standard and quality. Besides, survey implementation led to a change in conventional paper-based survey to paperless survey by using hi-tech real-time technology.

This survey, which mainly helped to know the true epidemiology of TB, monitor the ongoing program impact and collect relevant data on incidence and prevalence, is believed to strengthen the national TB prevention and eliminate the TB from the country.

Since reliable baseline information is an essential for developing and implementing TB elimination initiatives, the findings of this survey will be great importance for the overall management of National TB control program particularly for planning, policy and decision-making. In addition, the findings will support the national TB control program in guiding the efforts of the government and partners towards reaching the sustainable development goal. Therefore, it is my great pleasure to recommend using this survey finding for planning and decision making of TB prevention and control activity in Nepal.

I would like to take an opportunity to sincerely thank to all members engaged in carrying out survey from different ministries and organizations including MoHP, National TB Control Centre, World Health Organization, RIT/JATA, Save the Children International/Global Fund, LHL International, Damien Foundation, IOM, NATA GENETUP and JANTRA/INTREPID Nepal.

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Foreword

Tuberculosis still remains as one of the leading causes of infectious disease and public health challenges especially in developing countries. This continues to pose significant new challenge to manage tuberculosis response, and the professional communities including policy and public health experts, scientists, clinicians and academicians are constantly exploring effective ways to investigate and eliminate this disease.

In our context, we would like to acknowledge National Tuberculosis Control Centre (NTCC), development partners and technical agencies, who envisioned the idea for conducting the national tuberculosis prevalence survey, invested resources and created enabling environment for successful implementation of the survey activities.

My sincere thanks to WHO country team and Save The Children (GF/SCI) for their invaluable technical and financial supports in conducting this nationwide survey. Many thanks also to WHO consultants and other global experts who carried out midterm review of TBPS and for sharing their experiences that greatly contributed in successful implementation of the survey.

We would also acknowledge for Research Institute of Tuberculosis of Japan for designing, carrying out, monitoring, including laboratory quality control and analyzing the survey data.

Many thanks also to Prevalence Survey Steering Committee, Technical Committee and Technical Working Committee for providing timely policy support, ensuring financial supports, technical guidance, preparation of all the required documents and management of outsourced agencies for field data collection, NTCC and PS secretariat members for professionally handling survey operations in agreement with WHO quality standards, and all levels of governments, organizations and local communities for ensuring successful field operations. We would also like to thanks to all survey participants for their time and support and cooperation.

Finally, the survey would have not been possible without supports and commitments from all levels and organisations. My special thanks to the World Health Organization (WHO) country team, Save the Children International/ Global Fund, LHLI International Tuberculosis Foundation and Damien Foundation, Intrepid and JANTRA, International Organization for Migration, NATA/GENETUP and NTCC Reference Laboratories.

I am confident that the finding of this survey will be useful for policy makers, planners, professionals, donors, technical and funding agencies and all other concerned stakeholders for addressing current tuberculosis situation.

For more information, the detail version, summary version and policy brief of tuberculosis prevalence survey can be available at www.nepalntp.gov.np

Dr. Anuj Bhattachan
Director and Principle Investigator

ABBREVIATION

ACSM	Advocacy Communication and Social Mobilization
BCC	Behaviour Change Communication
DEFF	Design Effect
CXR	Chest X-Ray
DOT	Directly Observed Treatment Short Course
GENETUP	German Nepal Tuberculosis Project
GFATM	The Global Fund to Fight AIDS, Tuberculosis and Malaria
HIV	Human Immunodeficiency virus
HP	Health Post
IOM	International Organization for Migration
IPW	Inverse Probability Weight
IT	Information Technology
JANTRA	Japan- Nepal Health and Tuberculosis Research Association
JATA	Japan Anti-Tuberculosis Association
KTM	Kathmandu
MDR	Multi Drug Resistant
MI	Multiple Imputation
MOHP	Ministry of Health and Population
MTB	Mycobacterium Tuberculosis
NaOH	Sodium Hydroxide
NATA	Nepal Anti-Tuberculosis Association
NTCC	National Tuberculosis Control Center
NTM	Non-Tuberculosis Mycobacteria
NTP	National Tuberculosis Program
NPS	National Tuberculosis Prevalence Survey
PHCC	Primary Health Care Center
P/N Ratio	Prevalence/Notification Ratio
PR	Principal Recipient
PS	Prevalence Survey
RIT	Research Institute of Tuberculosis
RIF	Rifampicin
SD	Standard deviation
SRS	Simple random sampling
TB	Tuberculosis
Tx	Treatment
WHO	World Health Organization

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ACKNOWLEDGMENT

We are very thankful to WHO Country Office Nepal, RIT/JATA and Save the Children Nepal for technical assistance and quality assurance for the entire process of the survey. We sincerely appreciate the financial contributions by Save the Children (PR Global Fund Grant), WHO, LHL International, Damien Foundation for the survey. We also are grateful to Intrepid Nepal and JANTRA for successfully carrying out the entire field data collection. Our sincere thanks also go to central labs; German-Nepal Tuberculosis Project / Nepal Anti-Tuberculosis Association and International Organization for Migration Nepal for supporting to carry out central laboratory functions along with National TB control Centre Lab. We are also thankful to Info Developers Pvt. Ltd for supporting in development of the data-management software for the survey. We also thank the inputs provided by experts during key review missions, data analysis, and report writeup. Finally, we like to acknowledge the support, dedication and hard work of the principal investigators, survey coordinators, and the entire TB Prevalence Survey team.

1 INTRODUCTION AND OBJECTIVES

Nepal conducted the first national TB prevalence survey with technical support by RIT/JATA, World Heath Organization (WHO) and Save The Children Nepal (SCI) in coordination with the WHO Global Task Force on TB Impact Measurement. Government of Nepal, SCI (through GFATM grant) was the main funding source and supported by LHLI, WHO and Damien Foundation. The field data collection in 99 survey clusters, across the country was carried out from April 2018 to June 2019.

The main objective of the survey was to determine the prevalence of TB among ≥15 years population in Nepal in 2018-2019 and specific objectives were:

1. To determine the prevalence of Xpert MTB/RIF positive TB among ≥15 years population in Nepal in 2018-2019.

2. To describe the health-care seeking behavior of people with TB symptoms and

3. To describe the health service (TB services) utilization practices of participants with a history of TB diagnosis and treatment.

2 METHODOLOGY

2.1. SAMPLE SIZE CALCULATION & SAMPLING

Multistage cluster sampling (using PPS model) was designed along the WHO handbook using 2011 national census population for the survey sampling. To consider operational feasibility to complete the survey within a year, the cluster size of 500-600 was determined. Primary sample size of 57 589 in 99 clusters . Four primary strata were hill, mountain, terai, and KTM valley, each of which were further divided into rural and urban clusters, and further into small, medium or large clusters (based on population size).

People aged 15y or older who lived in selected areas for more than a week in the last two weeks were eligible for the survey and invited. Survey activity was carried out in all the 99 clusters as planned without any replacement and cancellation starting from April 2018 and completed by June 2019.

2.2. SCREENING INTERVIEW AND CHEST X-RAY TO DECIDE ELIGIBILITY FOR BACTERIOLOGICAL EXAMINATIONS

Every eligible participant was invited to participate in the screening camp for individual interviews and Chest X-rays. If symptom positive (cough ≥ 2 weeks or cough <2 weeks with additional symptom like wt. loss, chest pain, loss of appetite, hemoptysis, breathing difficulty, night sweating, and tiredness) OR Chest X-ray suggestive OR X-ray not available (onsite- refused, exempted, not available and all offsite participants) were eligible to submit sputum (spot and morning for Xpert MTB/RIF and smear). 50% among them along with those with history of TB submitted additional morning sample for culture. Three laboratories were used for the survey; National TB reference lab at NTCC, GENETUP/NATA lab in Kathmandu and IOM lab in the Eastern Region of Nepal.

2.3. STUDY CASE DEFINITIONS

All Xpert MTB/RIF positive cases regardless of symptom with:

No TB treatment history: If X-ray suggestive is active or mixed (active and healed), regardless of culture result is a case. If X-ray suggestive is not active or mixed, then a positive culture result is required to be considered as a case.

With Past TB treatment history: If X-ray suggestive is active, regardless of symptom screening result or culture result, is a case. If X-ray suggestive is not active, then a positive culture result is required to be considered as a case.

Currently on TB treatment: A positive culture result is a case, regardless of X-ray.

3 RESULTS

There were 93 085 people enumerated from the selected clusters. Among the enumerated population, 58 956 (63%) were eligible to participate in the survey. 54 200 (92%) of the eligible participated in the survey. The participation rate was high among all age groups, but lower in men than women. Kathmandu (88.7%) had the lowest participation rate but were still higher than the targeted 85%. Those with the highest level of education, professionals/managerial/technical, and high economic status had the lowest participation rate. When we observed the participation rate by sex and age group, men aged 25-34 years old had the lowest participation rate. 96.6% of participants had no TB treatment history. (Figure 1.)

Figure 1: Consort diagram of TB Prevalence Survey (flow chart)

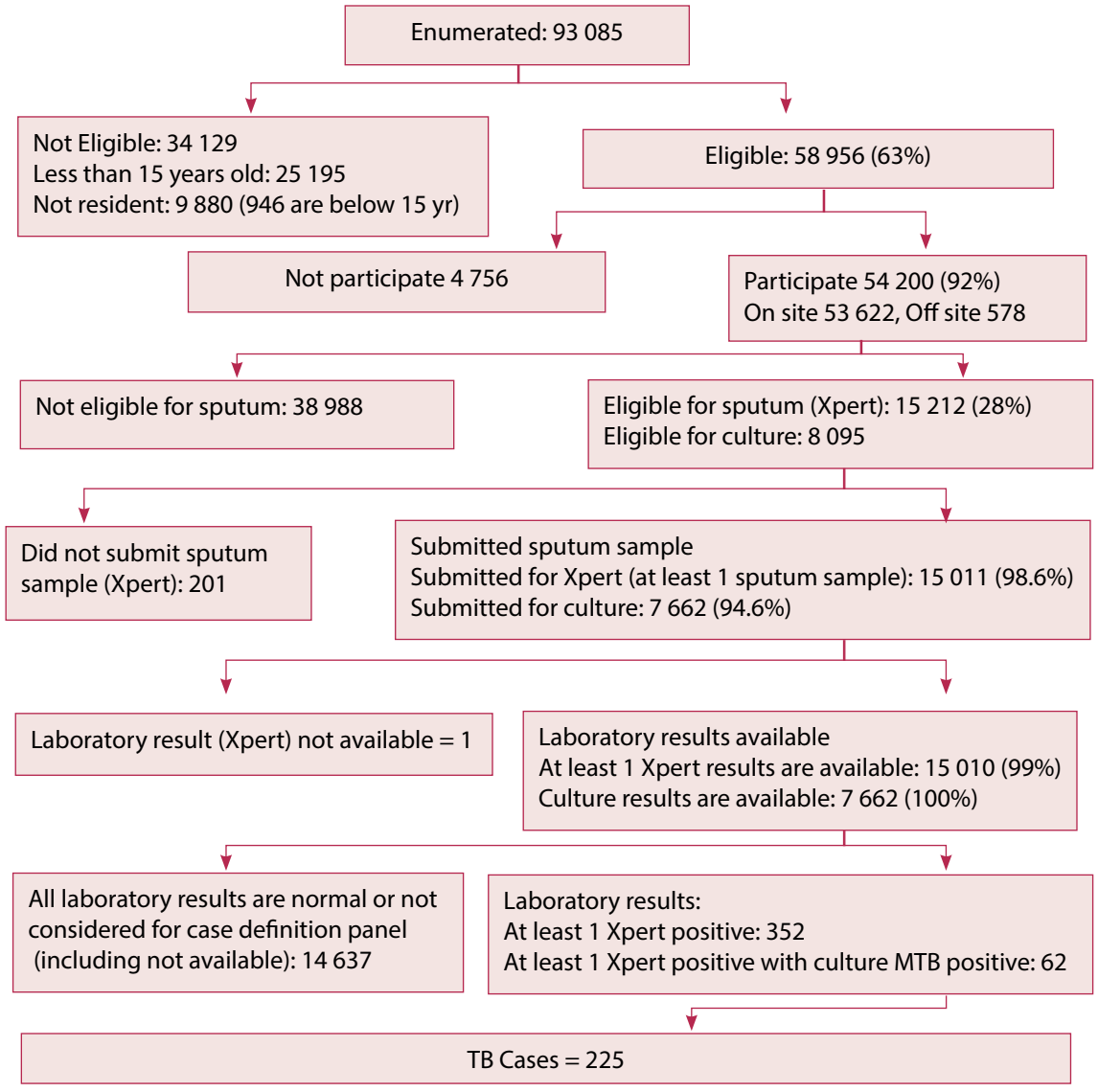


Figure 2: Eligible for sputum (in %) by X-ray and Symptom (N = 14 634)

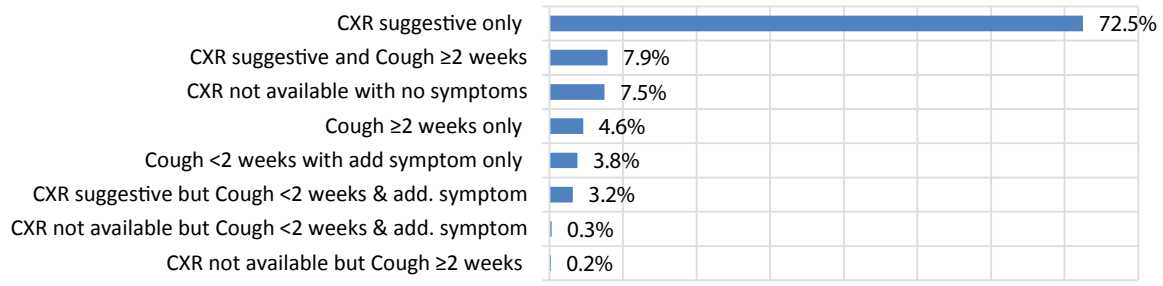
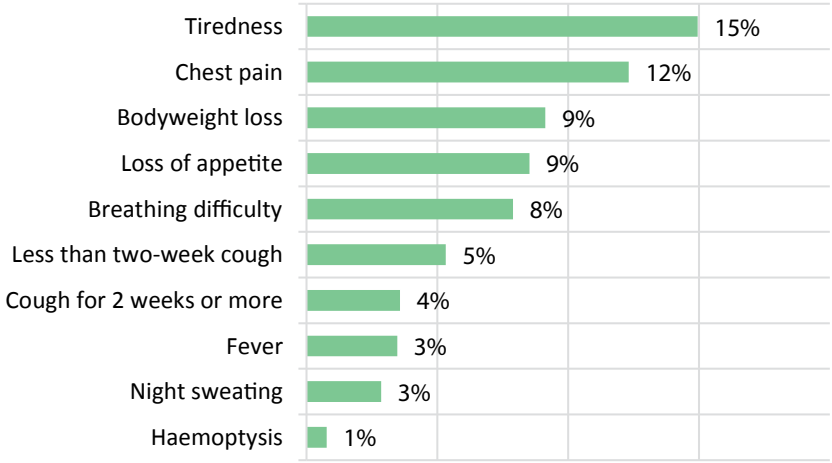


Figure 3: Results of screening interview (in %): TB-related symptoms (N = 54 131)



Among on-site participants, 14 634 (27.3%) were eligible for sputum examination. Most sputum eligible participants (72.5%) had only CXR suggestive (field X-ray reading – abnormal and eligible for sputum) and only a small proportion (8.4%) had positive symptoms only. 8% of eligible participants were either exempted or refused to take the X-ray. (Figure 2)

54 131 participants who answered for symptom screening (among 54 200 who participated) , most had tiredness (15%) and chest pain (12%) and only 4% had classical TB symptom of cough for 2 weeks for more. 69 off-site participants (out of 578) did not have their symptoms recorded. But regardless of symptom screening, all off-site participants were eligible for sputum. (Figure 3)

96.8% (52 457 among 54 200) of participants had field X-ray done, with 38 899 (74%) read as "Normal", 11 718 (22%) as "Abnormal and eligible for sputum examination" and 3.5% (1 840) as "Abnormal and not eligible for sputum examination". The images were also 100% read by the central reader. Nearly 80% of the field CXR reading was in agreement with the central reading (Table 1).

Table 1: Relationship between field screening readings and central radiology readings

Field CXR reading	Normal	Central CXR Reading		
		Abnormal and eligible for sputum examination	Abnormal and not eligible for sputum examination	Total
Normal	38 056	462	381	38 899
Abnormal and eligible for sputum examination	7 487	3 591	640	11 718
Abnormal and not eligible for sputum examination	1 617	57	166	1 840
Total	**47 160**	**4 110**	**1 187**	**52 457**

Among eligible for sputum (15 212), 98.7% submitted at least one sputum sample and 96.6% submitted both samples. 94.7% eligible for culture submitted sputum. 2.3% (352) among those had at least one positive Xpert MTB/RIF. Among 14 468 participants with results of both morning and spot samples, there was 97.6 % agreement between the results, which further validates the result of the test and shows the quality of sputum samples obtained for spot compared to morning samples. (Table 2)

Table 2: The cross-tabulation of positive results load on spot and morning samples Xpert MTB/RIF results of participants having both results

Xpert MTB/RIF results			Morning						
			Mtb not detected	Mtb detected				Error, Invalid	Total
				Very low	Low	Medium	High		
Spot	Mtb not detected		14 053	72	32	3	0	35	14 195
	Mtb detected	Very low	46	27	22	6	0	1	102
		Low	22	12	23	22	4	1	84
		Medium	5	3	11	17	5	0	41
		High	0	0	0	3	8	0	11
	Error, Invalid		32	1	0	0	0	2	35
Total			14 158	115	88	51	17	39	14 468

Among 7 662 participants samples processed for culture, 82 (1.07%) participants samples were positive for MTB and 392 (5.1%) contaminated. After reprocessing contaminated samples, it resulted in additional 1 MTB, 2 NTM, 388 Negative and 1 contaminated, with final culture results of Negative (95.9%), MTB (1.10%), NTM (3.00%), and Contaminated (<0.1%). 6% NaOH was used for decontamination, but with higher culture-negative results after reprocessing, it was switched to 5% Oxalic acid. Results after reprocessing were considered as final culture results (Figure 4).

Figure 4: Culture results (before and after reprocessing) (N= 7 662)

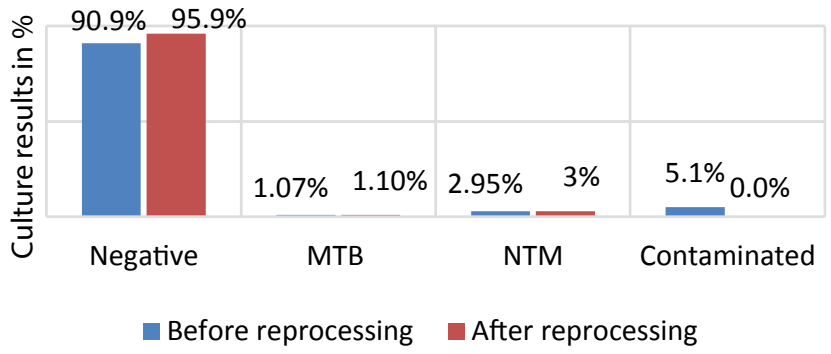


Table 3: The comparison between Xpert MTB/RIF and culture results (Xpert MTB/RIF results take the highest degree of positive results among the two samples)

		Culture results				Total
		Negative	MTB	NTM	Contaminated	
MTB not detected		7 222	21	213	1	7 457
MTB detected	Very low	64	20	4	0	88
	Low	43	19	6	0	68
	Medium	17	17	4	0	38
	High	3	6	1	0	10
Error, Invalid		1	0	0	0	1
Total		7 350	83	228	1	7 662

When we compare the Xpert MTB/RIF and culture result, most of the Xpert MTB/RIF positive culture-negative had a very low or low bacteriological load in the Xpert MTB/RIF. (Table 3)

3.1. SURVEY CASES

Among 352 participants with at least one Xpert MTB/RIF positive, 225 were decided as TB cases based on directly observed results before imputation. 225 cases included 191 New, 31 with past TB history and 3 currently on treatment cases. Out of 225 cases, 14 (6.2%) cases had rifampicin resistance (5.7% among new cases 8.8% among TB treatment history cases). (Table 4)

Table 4: TB cases defined from participants; cases with at least 1 Xpert MTB/RIF result positive and regardless of symptom

CXR by Panel Reading	**No TB Tx history**		**Past TB Tx history**		**Currently on Tx**
	MTB culture result	**TB case**	**MTB culture result**	**TB case**	**TB cases**
Active TB	Regardless	159	Regardless	29	Regardless of X-ray, MTB culture result = 3
Mixed appearance (active and healed)	Regardless	22	Positive	1	
Healed TB	Positive	6	Positive	1	
Other lung abnormalities	Positive	4	Positive	0	
Normal lung / other non-pulmonary abnormality	Positive	0	Positive	0	
Exempted CXR	Positive	0	Positive	0	
Total TB cases	**191** (11 Rif resistance)		**31** (3 Rif resistance)		**3** (No Rif Resistance)

3.2. CHARACTERISTICS OF 225 PS SURVEY CASES.

During the survey period, the country was transitioning to federalization. Due to the political changes, the administrative boundaries were also redefined. In doing so, while the population projections and terrain (hill, mountain, terai, KTM valley) remained the same, the definition of rural and urban changed significantly. that's why rural/urban segregation was dropped for analysis purposes. Out of 99 clusters, 79 clusters (80%) had at least one TB case and few clusters had as many as 9-12 cases. The number of cases per cluster on an average was 2.3, but distribution was not consistent. This might indicate that TB cases may be widely distributed in Nepal with some hot spot areas. (Figure 5)

Figure 5: The distribution of clusters based on the number of TB cases identified in the survey

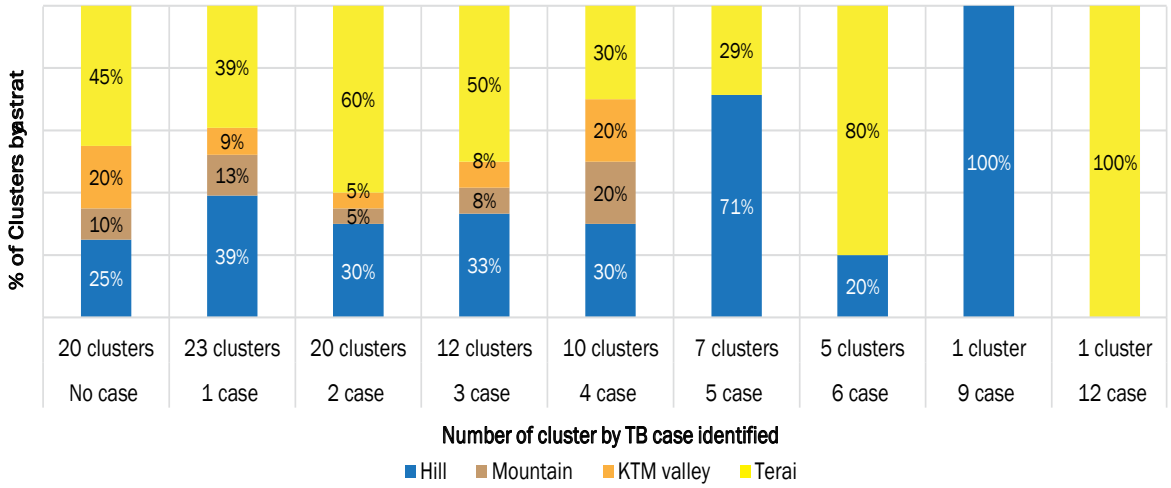


Figure 6: The characteristics (% distribution) of prevalent TB cases (N=225)

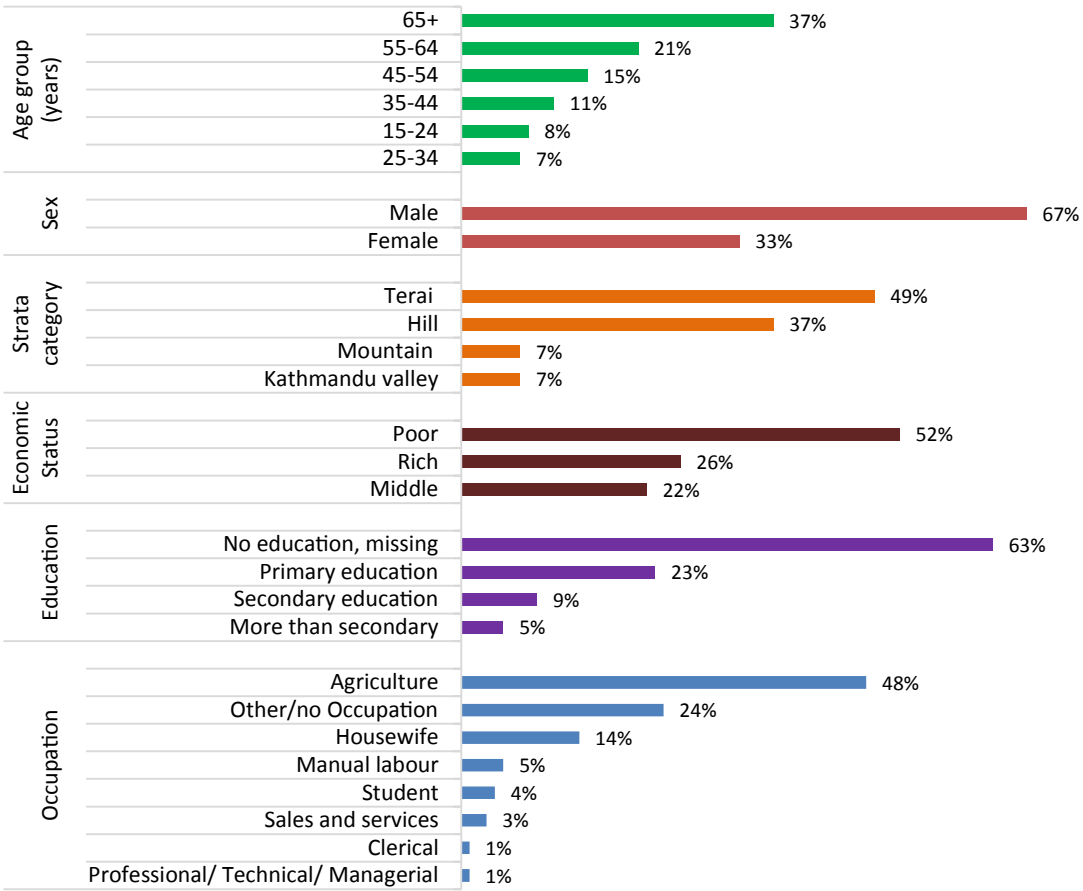
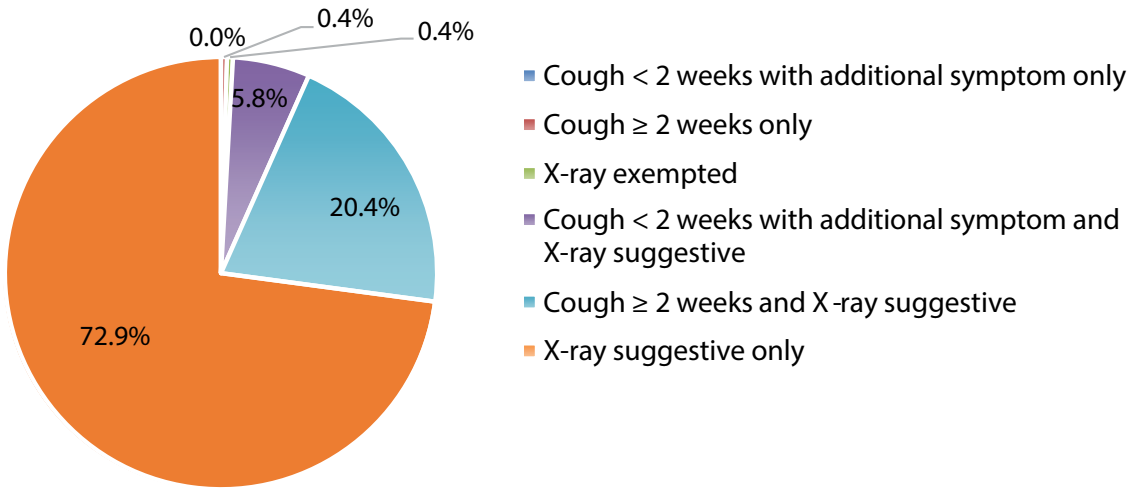


Figure 7: Symptom screening and CXR findings of TB cases (N=225)



Among 225 survey cases, 83 were from hill region, 111 from terai,16 from mountain and 15 from KTM valley. Male/Female ratio was 2.04 survey. 58% of cases were reported in the older age group (age 55 yr or more). 63% of cases reported having no education, 48% reported agriculture as profession and 52% were poor. (Figure 6)

Of the TB cases, more than 70% showed abnormal chest X-ray without any symptoms. This highlights the importance of the use of digital X-rays as a screening tool and not rely on symptom screening alone to increase TB case detection. (Figure 7)

3.3. NATIONAL PREVALENCE OF PULMONARY TB AMONG THE POPULATION AGED ≥ 15 YEARS OLD

Analysis followed recommendation (Model-3) by the WHO Global Task Force on TB Impact Measurement (Floyd et al. 2013). 2018 Population projection was used to adjust for population structure and post-stratification adjustment was applied. The statistical analysis was carried out using Stata 16 (Stata Corp., Texas). From this, the national prevalence of pulmonary bacteriological confirmed TB among 15 years or more was calculated to be 374.5 per 100 000 population. (Table 5)

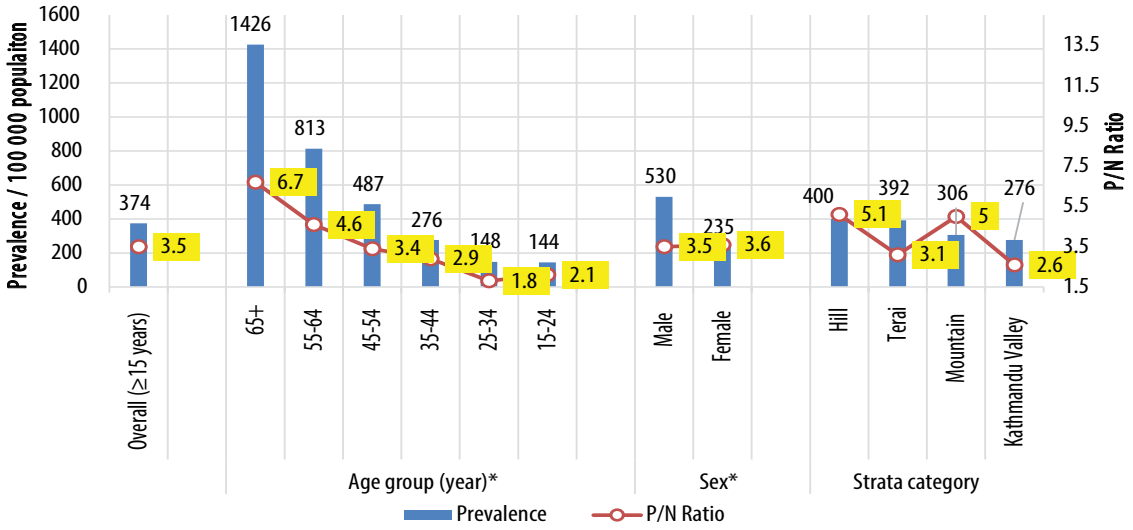
Table 5 Estimated TB prevalence

Prevalence	Point estimate
Prevalence among the eligible population (crude, unweighted)	434.2 (357.3 - 511.2)
Prevalence among the eligible population	426.5 (350.1 - 502.9)
Prevalence adjusted for the 2018 projection (aged 15 years or over)	374.5 (307.6 - 441.4)

Male had significantly higher TB prevalence than female (Male/Female ratio 2.25), which was also higher than what we observed in case of notification in 2018 (1.7:1), while the P/N ratio for both is similar (3.5: 3.6), which indicates lower notification among women.

The older the age group, the higher the prevalence. The prevalence of the oldest age group (65+) is almost 10 times that of the youngest group (15-24), the P/N ratio also increases with increasing age (3 times more in the oldest age group as compared with the youngest group). The gap is larger than what

Figure 8: Xpert MTB/RIF positive pulmonary TB prevalence and P/N Ratio in different strata and demographic characteristics



we observed in the routine case notification. Since older age groups people are often care-givers for young grandchildren in Nepal, the higher prevalence in the elderly is of significant concern.

Prevalence was also higher in hill followed by terai, mountain and least in KTM valley (although not statistically significant).

Similarly, the P/N ratio was also highest in hill and mountain (around 5 each) and least in KTM valley (2.6), which indicates KTM valley has better access to health services. (Figure 8)

3.4. ESTIMATED ALL FORM TB PREVALENCE AMONG ALL AGE POPULATION

The calculation considered the direct finding of survey TB cases. Prevalence was measured based on case definitions that included Xpert MTB/RIF results. The sensitivity of Xpert MTB/RIF against a standard of culture in the survey was approximately 81%, close to the pooled value calculated at the GDG meeting held in Geneva in December 2019. In the survey, two Xpert MTB/RIF tests on two separate samples were performed in such a way that the interpretation of the two combined tests was positive whenever at least one of the two tests was positive thus improving sensitivity at 91.3% (SD 6.4%). The adjustment for imperfect sensitivity was based on a Bayesian approach.

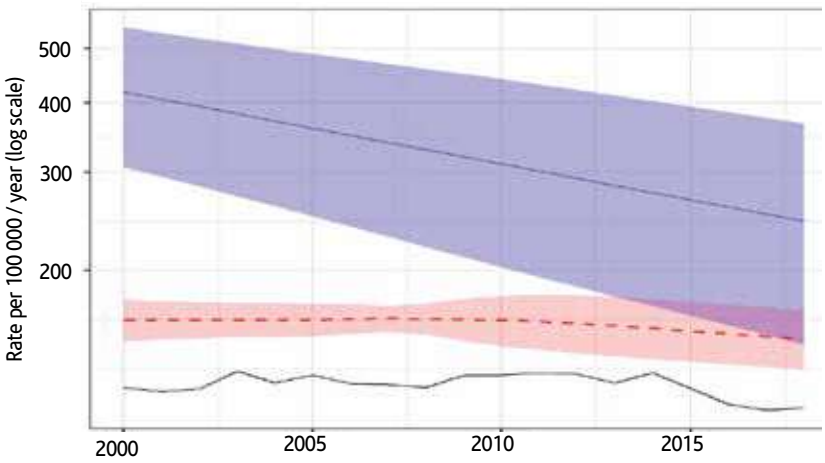
The prevalence of all forms of TB among all ages was extrapolated, accounting for the proportion of extrapulmonary TB using notifications data since 2014 and for the risk ratio of TB among children (vs adults) as estimated by WHO.

The prevalence of all forms and all ages was 416.3 (314.1 – 518.5) / 100,000 population for 2019.

3.5. RE-ESTIMATION OF INCIDENCE SINCE 2000 FOR TB FOR ALL AGE-GROUPS AND ALL FORMS

HIV prevalence ratio (HIV among prev TB / HIV among inc TB) assumed = 0.8 in the absence of data on HIV prevalence among prevalent TB cases in Nepal. Assuming a stable state equilibrium of the TB epidemic, two models were developed. An assumption of a 3% rate of decline in incidence over the period 2000-2018 was used, supported by a steep gradient in prevalence rates over groups of increasing age (Figure 8), suggesting a decline in transmission. Accounting for Xpert's imperfect sensitivity and a large proportion of extra-pulmonary TB (not measured in the survey), the estimated incidence appears to be higher; 245.1 (147.4 – 367.3) per 100 000 population, than previously estimated (Figure 9). There is significant uncertainty about the estimated incidence. Reasons include sampling uncertainty about prevalence compounded by the adjustments made to account for unmeasured prevalence (particularly extra-pulmonary TB), the use of Xpert, which has a lower sensitivity than culture, and the usual assumptions made about unmeasured disease duration of different types of TB cases. The absence of HIV data among prevalent TB cases is not a significant source of uncertainty.

Figure 9: Incidence rate (revised) vs case notification rates



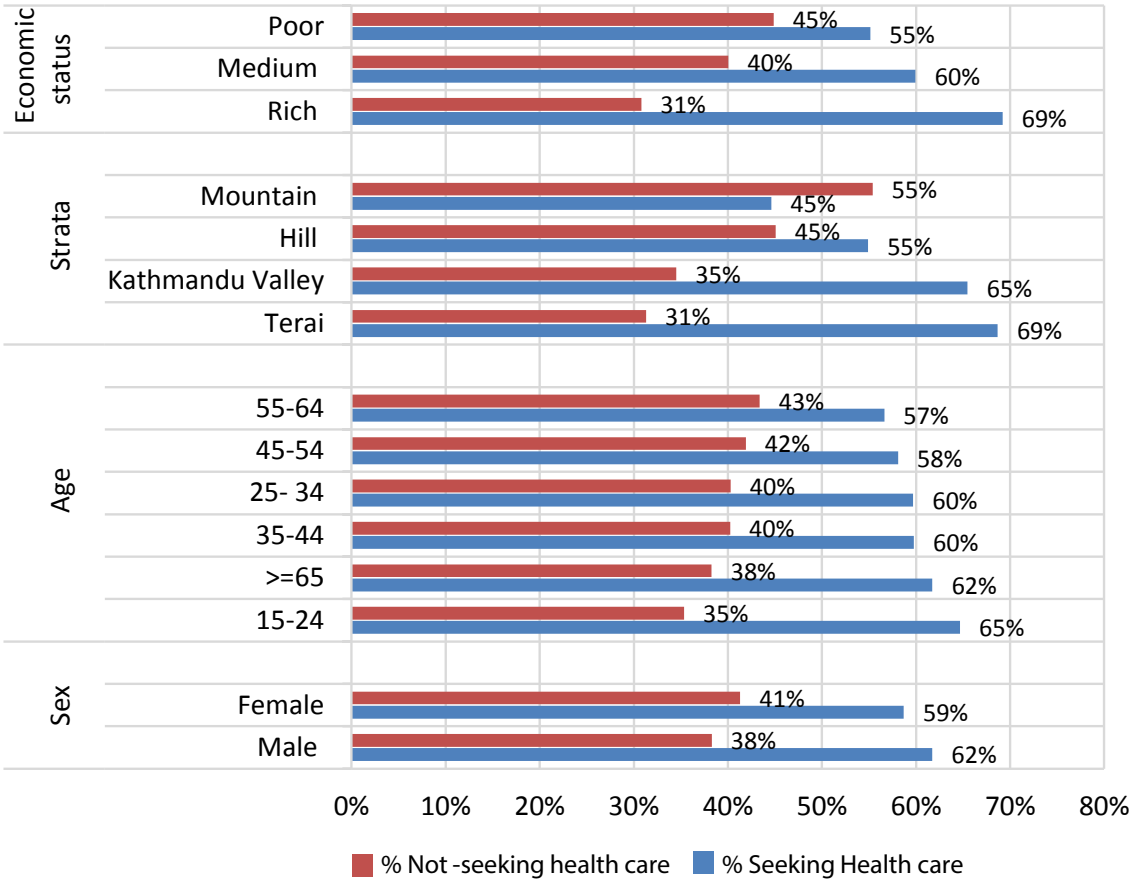
3.6. HEALTH SEEKING BEHAVIOUR OF SYMPTOMATIC PARTICIPANTS

1 934 participants with cough for two weeks or more provided information of health seeking behaviour. 31% sought medical treatment in government health facilities and 14% in private health facilities as the first priority. 39% did not seek any care. The main reasons for the preferred choice are presented in Table 6.

Table 6: First choice of Health facility for seeking care (in %) among those with cough ≥ 2 weeks with main reasons (N=1 934)

Health facility of the first choice	1st choice	Main reason
Government health facility (Government hospital, Urban health clinic, Government health centers (PHCC/HP)	30.9%	1. Near/easily accessible 2. Faith towards the service 3. Good behavior of the service provider
Private health facility (Medical College, Private hospital, Private clinics)	13.6%	1. Faith towards the service, 2. Near/easily accessible, 3. Good quality
Non-medical facilities (Pharmacy, Self-medication, Traditional healer, Uncategorized/Others)	13.5%	1. Others 2. Faith towards the service 3. Near/easily accessible
No attention	38.7%	1. Others 2. Financial reasons 3. No convenient time
Missing	3.2%	

Figure 10: The characteristics of participants with cough ≥ 2 weeks, in relation to care-seeking (N= 1 872)



Among the participants with cough for two weeks or more, the characteristics are presented in. Of those who sought medical services, it was found to be higher in men; higher among older age group, higher in terai and KTM valley and higher economic status.

The proportion of not seeking care was higher in women, working-age group, mountains, and among the poor. (Figure 10)

3.7. HEALTH SERVICE UTILIZATION BY TB PATIENTS

Among the participants with current or past TB, government health facilities were the first choice for most TB patient (60% or more) to seek both TB diagnosis and treatment services, followed by the private sector, and those taking services outside the country. Non-medical services utilization was higher among past TB patients, whereas the use of medical facilities (both Government and private health facilities) are higher among current TB patients. (Figure 11).

Among those who were taking treatment services outside the country, most were male, most from working and older age group and terai region (62%). The reason may be due to a porous border with the neighboring country where the population freely migrate across order areas at scale. Figure 12

More than 80% of participants with TB treatment history took treatment either under the supervision of health workers or at the health facilities or taken at home under supervision with frequent visits to the health facilities. Only less than 10 % took treatment without any observation. This indicates that, those who were diagnosed and started on treatment, the quality of care is acceptable. (Figure 13)

Figure 11: The first choice of health facilities (in %) to obtain TB services by participants having Current or Past TB

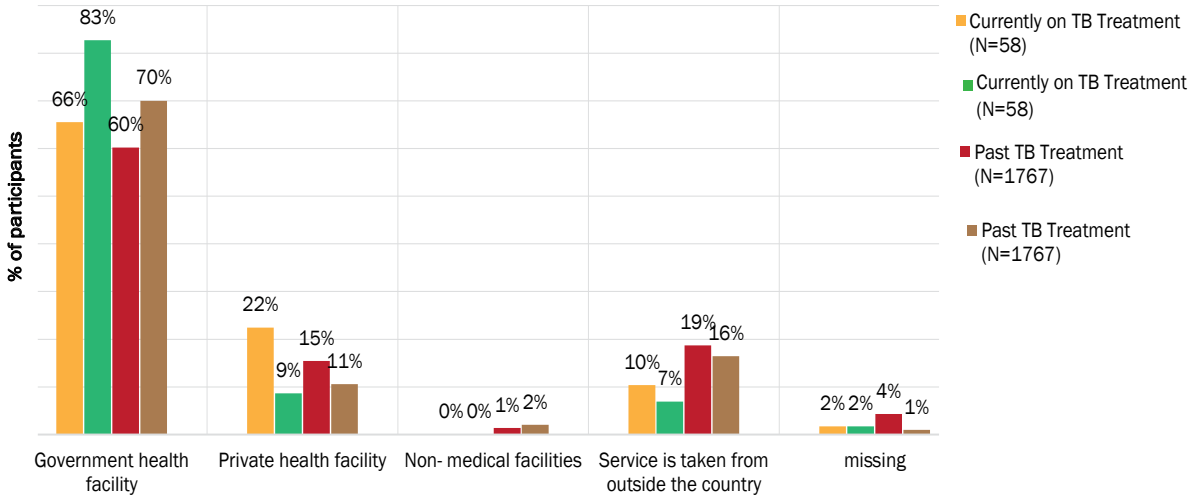


Figure 12: The characteristics of participants (in %) taking TB treatment abroad (N=294)

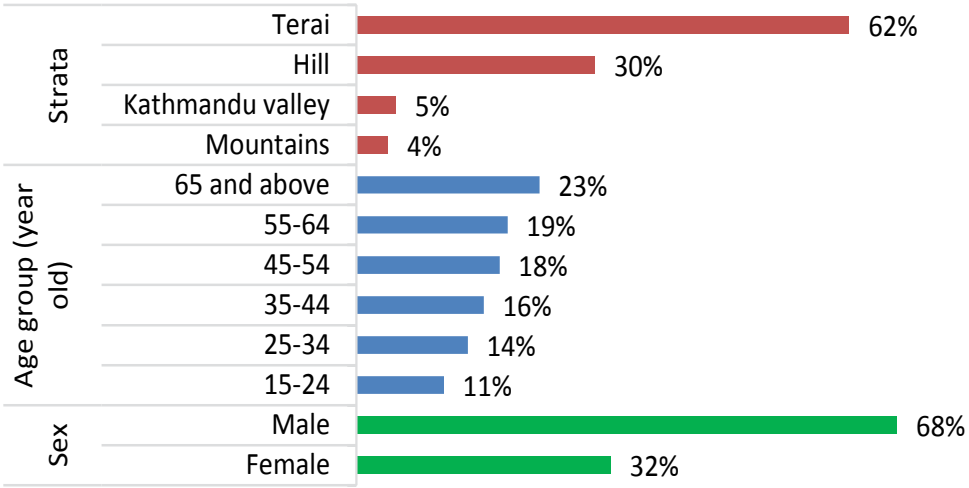
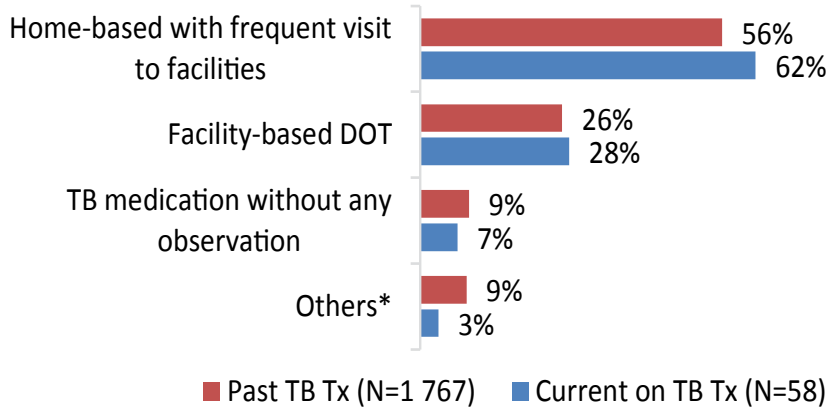


Figure 13: The type of TB treatment observation reported by participants with current and past TB history



*took medicine outside the country, but the type of DOT not known

4 DISCUSSION

4.1 SUCCESSFUL SURVEY OPERATION WITH INNOVATION

National TB Prevalence Survey in Nepal 2018/19 was successfully completed. Field data collection was carried out in 99 cluster sites as planned without any replacement. 92% of eligible population participated in the survey. Individual interview to screen symptom and Chest X-ray by direct digital image were offered to every participant and 96.8% of participants received Chest X-ray. 28% among those who participated were to submit sputum and 98.6% among them submitted at least one sample. Xpert MTB/RIF was used for the primary diagnostic tool and supported by culture examination, which was carried out among 50% of participants eligible for sputum and among those with a history of TB. 99% who submitted sputum had at least one valid result of Xpert. The very low missing values at each critical step of the survey suggest high quality of the survey.

Data management for the survey was done using locally developed software. The entire data management processes, both field and central units, were done by entering the data directly into the software at all levels (almost paperless). This saved time for re-entry and validation processes.

4.2. TB BURDEN (GEOGRAPHY, AGE, AND SEX)

TB prevalence in Nepal was higher than previously estimated. the estimated TB prevalence rate (TB of all forms and all age groups) of the country was estimated to be 416 (314-518)/ 100,000 for the year 2018. The P/N ratio was 3.7 when compared with national notification rates.

Prevalence of Xpert MTB/RIF Positive Pulmonary Tuberculosis among adults of age 15y or older was 374 (307 - 441)/100,000. The TB prevalence was higher among older age group. This might be a good sign to suggest an epidemiological shift of TB. However, a high P/N ratio might suggest poor access to TB services for those elderly patients.

There is no significant difference in prevalence among geographical divisions. However, there was a difference in the P/N ratio (P/N ratio highest in Mountain and hills 5 and 5.1 respectively) which suggests, that the reach of program and access to health care is difficult in those areas. Hence, special efforts should be made to address those hard to reach areas and communities with TB hot spot.

The re-estimation of incidence based on the prevalence survey findings suggested significant impact of efforts on TB epidemiology in Nepal, which had led to an estimated annual reduction of TB incidence by 3% in the last decade. This decline is better than the global annual decline rate of 1.5%–2%. However, this decline needs to be further accelerated to meet End TB targets.

4.3. FUTURE ROLE OF MORE SENSITIVE DIAGNOSTIC TECHNOLOGIES

As evident from the survey results, CXR screening has contributed to more than 70% of PS cases. The X-ray services need to be expand and utilized as a screening tool for TB program where feasible. Experience of using digital x-ray with real-time transmission of x-ray images during the survey suggests the possibility of similar efficient approaches for reading x-rays in a program setting. Also, sensitive molecular diagnostic tests such as Xpert MTB/RIF should be scaled up to increase case finding.

4.4. HEALTH SEEKING BEHAVIOR AND HEALTH SERVICE UTILIZATION

Majority of those with respiratory symptoms sought care at government health facilities. However, approximately 39% (mostly among women, working-age, rural, mountains, and poor groups) did not seek any services. This alarming proportion of not seeking health-care needs to be addressed by intensive ACSM and BCC activities and increasing access to quality TB services.

The survey results also indicated good trust in government health services but may also indicate a lack of access to alternative services. This is an opportunity to improve access to quality TB diagnosis, care, and treatment in the public facility, and also, an opportunity to complement government health services with regulated private health sector.

Most of the patients also reported being either being supervised at the health facilities or on home-based DOT with frequent visits to health facilities. This might explain current high TB treatment success rates. Hence, patient-friendly services like community-based DOT should be scaled up.

4.5. TB AND CROSS BORDER MIGRATION

Significant number of the population sought TB services outside the country. Nepal has an open border with India where population travel across border for daily business in large numbers including seeking health care. And, in many occasions, migrate for work opportunities. Therefore, cross border collaboration to address TB screening and management between countries needs to be established.

5 CONCLUSION

National TB Prevalence Survey 2018-19 suggested a significant impact of efforts on TB epidemiology in Nepal that led to an estimated annual reduction of TB incidence of 3% in the last decade. However, the survey also identified higher TB burden than previously estimated. The survey also found emerging challenges such as higher TB prevalence in aging population and TB in hard to reach areas. Therefore, following needs to be addressed:

1. Ensure high-level political commitment to END TB.

- TB burden is much higher than previously estimated. It is essential to mobilize other sectors beyond health such as industries, education, finance, private sectors, communities, etc. for coordinated and joint efforts to End TB.
- Sustain the TB and MDR-TB response through high-level political commitment, strong leadership across multiple government sectors, partnerships and adequate investments in TB, including cross border collaboration.

2. Improve access to quality TB service.

- Ensure better access to more sensitive screening and diagnostic tools such as (chest X-ray and Xpert MTB/RIF. LPA, LAMP etc) to ensure early detection of TB.
- Ensure quality and patient friendly treatment services both at health facilities and in communities (e.g. Community Based DOT, family-based DOT etc).

3. Engage private sector in provision of high-quality TB services

- Improve roles of the private sector and hospitals in TB control to deliver high quality TB care and services.
- Implement mandatory case notification.

4. Increase awareness and create demand for quality TB services

- Empower communities with proper knowledge of TB and generate demand for quality TB services.
- Address TB problem among migrants by conducting appropriate screening and care where necessary
- Provide patients and their families with appropriate supports including social support and contact tracing.

5. Ensure increased investment in TB, both financial and human resources, to meet the Global commitment to #ENDTB#

- Commit to increase domestic investment for TB.
- Advocate for increased donor investment for TB.
- Ensure adequate human resources at all levels for high quality TB service delivery.
- Ensure NO out of pocket expenditure by TB affected families and

TECHNICAL SUPPORT BY: