TB Prevalence Survey in Ethiopia: Key Results & Lessons Learnt

Presented by:
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A/Director General
Outline

- Introduction
- Objective
- Study method/design
- Survey Result
- Strength and Limitation
- Implication to the program
- Lessons Learnt
- Acknowledgement
1. Introduction

- Prevalence of TB all forms 559/100000 (WHO estimate)
- Incidence Rate SS+ =163/100000 (WHO estimate)
- 8th high TB burden country in the world
- 3rd high TB burden country in Africa

Program achievement Global target
- Current SS+ CDR=36% 70%
- TSR = 84% 85%
2. Objectives

To determine the nationwide prevalence of pulmonary TB among the adult (15 years and above) general population in 2010/11
2. Specific Objectives

To determine the prevalence:

- Smear positive TB
- Culture positive TB
- Symptoms suggestive of TB
- Radiological abnormalities suggestive of TB
3. Method/Design

Study design and sampling technique

- Cross-sectional survey
- Multistage cluster sampling
- Stratified: Urban, rural & pastoral pop
- Sample size: 46,514 (aged > 15)
- Clusters: 85
  - (Rural (63), Urban (14) Pastoral (8))
- Cluster size: 548 subjects
Sampling Stage

- District
  - Kebele
    - Household blocks

PPS
85 (63 R, 14 U & 8 P)

PPS
1 in each district, total 85

Random selection of blocks, 550 individuals
3. Method/Design

Lab Examination

- AFB microscopy
- Solid culture
- Identification with capila

Data analysis

- Data entered using Cspro version 4
- Analyzed using Stata and SPSS
3. Method/Design...

[Diagram showing the screening and diagnosis process]

Symptom screening
Chest X-ray screening

- No symptoms
  - Normal chest X-ray
  - No smear microscopy
  - No culture

- Symptoms or Abnormal chest X-ray
  - Smear microscopy
  - Culture
4. Results

4.1 Census and eligible participants

- **Data, October 2010 – June 25, 2011**
- **19,267 HHs**
- **95,092 individuals (children age <15, 43.2%)**
- **Field team screened 51,667 (54.3%) as eligible**
4.2 Study Participants

- 46,697 (90.4%)
- 549/cluster (490-592)
- Female (92%) > Male (88.6%)
- Lower participation rate in urban (85.5%).
- No cluster < 85%
## Study participants

<table>
<thead>
<tr>
<th></th>
<th>Participants</th>
<th>Non-Participants</th>
<th>Interviewed</th>
<th>Field X-ray Performed</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Eligible Numbe r %</td>
<td>Number %</td>
<td>Number %</td>
<td>Number %</td>
</tr>
<tr>
<td>Male</td>
<td>24623</td>
<td>21819</td>
<td>88.6</td>
<td>2804</td>
</tr>
<tr>
<td>Female</td>
<td>27044</td>
<td>24878</td>
<td>92.0</td>
<td>2166</td>
</tr>
<tr>
<td>Total</td>
<td>51667</td>
<td>46697</td>
<td>90.4</td>
<td>4970</td>
</tr>
<tr>
<td>Urban</td>
<td>8654</td>
<td>7490</td>
<td>86.5</td>
<td>1164</td>
</tr>
<tr>
<td>Rural</td>
<td>38181</td>
<td>34952</td>
<td>91.5</td>
<td>3229</td>
</tr>
<tr>
<td>Pastoral</td>
<td>4832</td>
<td>4255</td>
<td>88.1</td>
<td>577</td>
</tr>
<tr>
<td>Total</td>
<td>51667</td>
<td>46697</td>
<td>90.4</td>
<td>4970</td>
</tr>
</tbody>
</table>
4.3 Screening Result

- Individuals enumerated in census: 95,092
- Eligible study population: 51,667 (54%)
- Participants screened by at least one method: 46,697 (90%)

Total eligible for sputum examination: 6,078 (13%)
- 806 (13%) eligible by both screening methods
- 2,220 (36%) eligible by symptoms screening only
- 3,013 (50%) eligible by chest X-ray screening only
- 41 (1%) exempted/refused CXR & symptomatic

Ineligible individuals:
- 41,125 children
- 2,300 adult non-resident

Non participants:
- 4,967 not present
- 3 present but no consent

Participants symptoms screening: 46,697 (100%)
Participants chest X-ray screening: 46,548 (99.7%)
Participants screened by both methods: 46,548 (99.7%)

1. 62 exempted from CXR
2. Source: [citation]
4.4 Laboratory Examination

- 6080 (13.1%) eligible for sputum.
- 5868 (96.6%) submitted at least one specimen.
- 5606 (92%) submitted two specimens.
The central medical panel reviewed all available information for the individuals with positive results from the laboratory.
Survey study case by screening

Smear-positive: 47

- 25 (53.2%): both screening methods
- 2 (4.3%): symptoms screening only
- 20 (42.6%): chest X-ray screening only

(Note: All smear positive culture conformed cases were identified by CXR screening)
Smear-negative, culture-positive: 63

- 21 (33%) both screening methods
- 9 (14%) symptoms screening only
- 33 (52%) chest X-ray screening only
The prevalence of smear positive TB among the study population was **108/100,000**.

<table>
<thead>
<tr>
<th></th>
<th>Crude prevalence (95%CI)</th>
<th>Cluster level Point prevalence (95%CI)</th>
<th>Missing value imputation and inverse value weighting</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Urban</strong></td>
<td>68 (22–157)</td>
<td>68 (0–151)</td>
<td>70 (6–135)</td>
</tr>
<tr>
<td><strong>Rural</strong></td>
<td>101 (70–141)</td>
<td>102 (63–142)</td>
<td>109 (67–151)</td>
</tr>
<tr>
<td><strong>Pastoralist</strong></td>
<td>166 (67–342)</td>
<td>168 (58–279)</td>
<td>170 (60–280)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>102 (75–135)</td>
<td>103 (69–136)</td>
<td><strong>108 (73–143)</strong></td>
</tr>
</tbody>
</table>
4.6.2 Prevalence of Bacteriologically confirmed TB among Age >15

- The prevalence = 277 per 100,000

<table>
<thead>
<tr>
<th>Category</th>
<th>Crude prevalence</th>
<th>Cluster level Point prevalence (95%CI)</th>
<th>Missing value imputation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>239 (197–289)</td>
<td>240 (190–290)</td>
<td>277 (208–347)</td>
</tr>
</tbody>
</table>
### 4.6.3 Prevalence of TB in Ethiopia (Including all age group)

<table>
<thead>
<tr>
<th>Type of TB</th>
<th>P /100000</th>
<th>95% CI</th>
<th>WHO estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smear positive</td>
<td>63</td>
<td>44-82</td>
<td>284 (2008 estimate)</td>
</tr>
<tr>
<td>Bacteriologically confirmed</td>
<td>156</td>
<td>118-194</td>
<td></td>
</tr>
<tr>
<td>All forms of TB</td>
<td>240</td>
<td>182-298</td>
<td>394 (2011 report)</td>
</tr>
</tbody>
</table>
5 Conclusion

- Observed Smear positive TB prevalence is much lower (three times) than the previous estimation.
- The case notification rate of smear positive TB in Ethiopia is close to the prevalence.
- Most patients (55%) were young (15 to 34).
5 Conclusion...

- Smear Positive Cases account only 43% of bacteriologically positive cases
- CXR detected most of bacteriological confirmed cases
- Prevalence of smear positive TB in urban was low but bacteriologically confirmed TB was almost the same as the national figure
6. Implication to the program

- Performance of the TB program is much better than previously evaluated.
- Low smear positive prevalence indicate the higher case detection rate.
- Very low proportion of known cases/chronic among prevalent cases indicate good performance of the TB treatment.
- DOTs is working to remove smear positive cases from the community.
Implication to the program...

- However majority of the cases are young & productive segment of the society (15-35)
- Future risk around urbanization and more threat with improved life expectancy
- Ethiopia is well on track to achieve MDG targets for CDR (66-78 %, WHO 2011)
- Detecting symptomatic smear positive is essential but not sufficient to control TB in the community.
- The survey result shows x-ray picks up most bacteriologically confirmed TB cases.
Lessons Learnt

- Survey completed with in the schedule
- Strong commitment & leadership of government
- Committed survey team
- Open process: to other Africa countries
- Good community involvement
- High participation rate
- High sputum collection rate
- International standard screening practice
- Strong supports by partners especially by WHO
Acknowledgement

- WHO (HQ, CO)
- TBCARE, Ethiopia
- Italian cooperation
- USAID
- GLRA