The association between common mental disorder and tuberculosis, a case control study from Guinea Bissau

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Outline

- Background
- Methods
- Results
- Discussion
Tuberculosis

9.6 million new TB-cases and 1.5 million deaths from TB in 2014

WHO. TB report. 2015
Global Mental Illness

- 13% of the total disease burden
- Third largest cause of disability adjusted life years lost (DALYs)

Tuberculosis and mental disorder

- Limited evidence from low and middle income countries

- Common mental disorder:
  - Prevalence rating from 27 % - 82 % in TB cohorts
  - Only one study from Africa investigates TB-cases compared to background population (Nigeria)
    - 30 % CMD in TB patients
    - 5 % CMD in healthy controls

Aghanwa HS et al. J Psychosom Res. 1998
Objective:
- Assess the association between common mental illness and tuberculosis in an area with high prevalence of tuberculosis

Study design
- case control study

Guinea Bissau:
- Prevalence of tuberculosis: 279/100,000
- Prevalence of mental illness is unknown

Cases

- Recruited from a running TB-cohort, diagnoses and treated for six months according to WHO criteria

- Screened for common mental disorder was performed at:
  - Inclusion
  - 2, 4 and/or 6 months follow up

- Not all included TB patients were screened at each time point
Controls

- The Bandim Health Project (BHP), a Demographic Surveillance Site (DSS) since 1978

- A randomized sample of unmatched controls was obtained from the surveillance database

- Screening for common mental disorder was performed by a trained field assistant visiting controls at home
Screening tools

- Kessler-10
  - 10 item Scale: 1-5 (sum: 10-50)
  - depression and anxiety
  - Validated in several sub-Saharan settings
  - Cut off 16

Tесфaye M et al. J Affect Disord. 2010
During the past 30 days, how often have you been feeling:

- 1. Tired out for no good reason?
- 2. Nervous?
- 3. So nervous that nothing could calm you down?
- 4. Hopeless?
- 5. Restless and fidgety?
- 6. So restless that you could not sit still?
- 7. Depressed?
- 8. That everything was an effort?
- 9. So sad that nothing could cheer you up?
- 10. Worthless?
Screening tools

- SCL-8
  - 8 item version of the SCL-90 (Scale 0-4)
  - depression and anxiety
  - Well-validated in high resource settings
  - Item dichotomization, cut off 0/1

Fink P et al. J Psychosom Res. 2003
SCL-8

- During the past 30 days, to what extent have you been bothered by the following problems:

  2. Nervousness or shakiness inside?
  30. Feeling blue?
  31. Worrying too much about things?
  33. Feeling fearful?
  54. Feeling hopeless about the future?
  71. Feeling everything is an effort?
  72. Spells of terror or panic?
  79. Feeling of worthlessness?
Interviews

- Portuguese versions of K-10 and SCL-8
- Interviews in Portuguese Kreol
- One field assistant for all interviews
- Performed continuously
Results

- **Controls:**
  - Interviews performed: 571

- **Cases:**
  - Interviews performed: 419
  - TB-patients interviewed: 218
Controls

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Inhabitants in study area
Registered in census database

Randomized sample
(n=1500)

Not eligible for screening (n=929)
- Travelling (n=108)
- Moved (n=629)
- Died (n=45)
- Absent (n=75)
- Unknown at address (n=63)
- Refusal (n=1)
- Other (n=8)

Screened controls
(n=571)
Cases, interviews at each time point

- At inclusion: 121
- At 2 months: 106
- At 4 months: 92
- At 6 months: 100

Cases at each time point were compared with controls
Sociodemographic characteristics

- Difference, cases vs controls (p<0.05)
  - Sex
  - Religion
  - Education
  - Employment
  - Smoking
  - Alcohol consumption
  - Civil state
### CMD, mean score, difference and effect size

<table>
<thead>
<tr>
<th></th>
<th>Controls Mean (SD)</th>
<th>Cases Mean (SD)</th>
<th>Dif. (CI)</th>
<th>P-value</th>
<th>Cohens d</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>At inclusion</strong></td>
<td></td>
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</tr>
<tr>
<td>K10</td>
<td>1.19 (0.21)</td>
<td>1.36 (0.28)</td>
<td>-0.17</td>
<td>0.000</td>
<td>0.68</td>
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<tr>
<td>SCL 8</td>
<td>0.23 (0.26)</td>
<td>0.41 (0.33)</td>
<td>-0.17</td>
<td>0.000</td>
<td>0.61</td>
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<td><strong>At 2 months</strong></td>
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<tr>
<td>K10</td>
<td>1.19 (0.21)</td>
<td>1.17 (0.15)</td>
<td>0.02</td>
<td>0.172</td>
<td>0.13</td>
</tr>
<tr>
<td>SCL 8</td>
<td>0.23 (0.26)</td>
<td>0.18 (0.21)</td>
<td>0.05</td>
<td>0.035</td>
<td>0.20</td>
</tr>
<tr>
<td><strong>At 4 months</strong></td>
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<td></td>
</tr>
<tr>
<td>K10</td>
<td>1.19 (0.21)</td>
<td>1.21 (0.25)</td>
<td>-0.01</td>
<td>0.588</td>
<td>0.06</td>
</tr>
<tr>
<td>SCL 8</td>
<td>0.23 (0.26)</td>
<td>0.24 (0.30)</td>
<td>-0.01</td>
<td>0.811</td>
<td>0.03</td>
</tr>
<tr>
<td><strong>At 6 months</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>K10</td>
<td>1.19 (0.21)</td>
<td>1.14 (0.16)</td>
<td>0.05</td>
<td>0.005</td>
<td>0.29</td>
</tr>
<tr>
<td>SCL 8</td>
<td>0.23 (0.26)</td>
<td>0.18 (0.26)</td>
<td>0.05</td>
<td>0.058</td>
<td>0.20</td>
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</table>
## Prevalence of common mental disorder

<table>
<thead>
<tr>
<th></th>
<th>SCL-8 (Cut off 1/0)</th>
<th></th>
<th>Kessler-10 (Cut off ≥16)</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Prevalence</td>
<td>N</td>
<td>Prevalence</td>
</tr>
<tr>
<td>TB-cases</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>At inclusion</td>
<td>40</td>
<td>33 %</td>
<td>18</td>
<td>15 %</td>
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<tr>
<td>At 2 months</td>
<td>11</td>
<td>11 %</td>
<td>1</td>
<td>0.9 %</td>
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<tr>
<td>At 4 months</td>
<td>10</td>
<td>10 %</td>
<td>5</td>
<td>5.4 %</td>
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<tr>
<td>At 6 months</td>
<td>8</td>
<td>8 %</td>
<td>2</td>
<td>2 %</td>
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<tr>
<td>Controls</td>
<td>39</td>
<td>6.8 %</td>
<td>14</td>
<td>2.5 %</td>
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<td></td>
<td>CMD defined by SCL-8 (cut off 0/1)</td>
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<td>CMD defined by Kessler-10 (cut off ≥16)</td>
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<td></td>
<td>Crude OR (95 % CI)</td>
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<td>Crude OR (95 % CI)</td>
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<tr>
<td>Controls</td>
<td>Ref</td>
<td>Controls</td>
<td>Ref</td>
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</tr>
<tr>
<td>TB-cases</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>At inclusion</td>
<td>6.73 (4.09-11.10)</td>
<td>7.00 (3.35-14.42)</td>
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</tr>
<tr>
<td>At 2 months</td>
<td>1.58 (0.78-3.19)</td>
<td>0.39 (0.05-2.91)</td>
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<tr>
<td>At 4 months</td>
<td>1.66 (0.80-3.46)</td>
<td>2.29 (0.80-6.51)</td>
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<tr>
<td>At 6 months</td>
<td>1.19 (0.54-2.62)</td>
<td>0.81 (0.18-3.63)</td>
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</tbody>
</table>
## CMD, Adjusted Odds Ratio

<table>
<thead>
<tr>
<th></th>
<th>CMD defined by SCL-8 (cut off 0/1)</th>
<th>CMD defined by Kessler-10 (cut off ≥16)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Adjusted* OR (95 % CI)</td>
<td>Adjusted* OR (95 % CI)</td>
</tr>
<tr>
<td>Controls</td>
<td>Ref</td>
<td>Ref</td>
</tr>
<tr>
<td>TB-cases</td>
<td></td>
<td></td>
</tr>
<tr>
<td>At inclusion</td>
<td>11.4 (5.79-22.61)</td>
<td>6.82 (2.49-18.7)</td>
</tr>
<tr>
<td>At 2 months</td>
<td>2.51 (1.05-6.01)</td>
<td>0.18 (0.01-2.42)</td>
</tr>
<tr>
<td>At 4 months</td>
<td>2.05 (0.83-5.03)</td>
<td>1.18 (0.29-4.76)</td>
</tr>
<tr>
<td>At 6 months</td>
<td>1.61 (0.65-4.00)</td>
<td>0.53 (0.09-2.98)</td>
</tr>
</tbody>
</table>

*Adjusted for sex, age, religion, employment, smoking, alcohol consumption and civil state

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Conclusion

Screening for anxiety and depression revealed:

- Higher prevalence of common mental disorder among TB patients at time of diagnosis compared to background population
- Decrease in score during treatment
Limitations

- Validation of screening tools
  - K-10: doubtfully low prevalence among background population and TB-patients

- Depression symptoms vs TB symptoms
  - Similar symptoms may blur the prevalence of CMD among TB-patients

- Sociodemographic background variables
  - The controls may not reflect the background population, due to the high amount of people non-eligible for screening
Acknowledgments

- Dedicated field staff and participants in data collection
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- The foundation of 17-12-1981 (fonden af 17-12-1981)
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Thank you