The prevalence and risk factors of Post-Traumatic Stress Disorder (PTSD) among injured workers in Bangladesh: A study on surviving workers from Rana Plaza building collapse

Presented by Taylor Fitch MPH

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Bangladesh

- Population: 166,000,000 as of 2014 (9th)
- Population Density: 1142/km² (1st among nations with pop. > 5 million)
- Total GDP: $175.52 billion est. 2013 (56th)
- Poverty rate: 26.0% pop. below poverty line
- Level of education: average is 10 years of schooling primary-tertiary
- Life expectancy: 69 yrs for men, 73 yrs for women
- Currency: Taka (1 USD = 78.35 Taka)
Garment Industry

The Good:
- Garment exports: $21.5 billion 2012-2013
- 80% of exports from Bangladesh are garments/textiles
- Decreased unemployment rate

The Bad:
- Managers take advantage of financial need
- Overtime violations
- Working conditions

Garment Industry: The Tragedies

- November 2012: Tazreen Fashion factory in Dhaka
- May 2013: Mirpur factory fire
- April 2013: at Rana Plaza in Savar
Rana Plaza: Images

(AP Photo/ A.M. Ahad)
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(AP Photo/Ismail Ferdous)
PTSD

- PTSD: Intrusive symptoms, avoidance, negative alterations in cognitions and mood, alterations in arousal and activity
- Consequences: Slower recovery of physical disabilities, failure of skill-training/employment programs, missing more days of work
- Demonstrated in different studies and complied in this table

<table>
<thead>
<tr>
<th>Pre-event Factors</th>
<th>Peri-event Factors</th>
<th>Post-event Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Type of injury</td>
<td>Occupation after event</td>
</tr>
<tr>
<td>Previous exposure to traumatic event</td>
<td>Pain experienced</td>
<td>Mental health care received</td>
</tr>
<tr>
<td>Economic status</td>
<td>Degree of fear of dying</td>
<td>Injury/pain sequela</td>
</tr>
<tr>
<td>Age</td>
<td>Seeing others who were hurt or injured</td>
<td>Social support system in place</td>
</tr>
</tbody>
</table>

DEVELOPMENT OF PTSD
The Study: Methods

- A convenience sampling of 181
  - Centre for Rehabilitation of the Paralyzed (CRP)
  - Total number of possible participants from CRP approximately 500
  - Needed over 160 for sufficient power

- Criteria for selection:
  - Location: Savar or surrounding areas
  - Received care from CRP initially or continuing care

- Conducted: April 22, 2014-May 22, 2014
- Translators were occupational therapy students at the CRP
The Study: Methods

- Demographic Survey
- WHODAS (8): Possible score of 12-60
  - Cross-cultural validity
  - Multidimensional look at disability
  - Not included in multivariate regression due to potential to overcorrect for emotional disability
- PCL-S Possible score of 17-80
  - Set as our primary outcome if score was over 50
  - 80% diagnostic power
  - Sensitivity of 0.78 to 0.82 and specificity of 0.83 to 0.86
- Univariate/multivariate logistical regression used to evaluate primary outcome (PTSD)
## Characteristics of the Study

<table>
<thead>
<tr>
<th>Variable</th>
<th>Number (%) or (SD)</th>
<th>Number (%) from Rana Plaza NGO ActionAid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>110 (60.7%)</td>
<td>933 (65%)</td>
</tr>
<tr>
<td>Mean age</td>
<td>27.8 (7.5)</td>
<td>29-38 years</td>
</tr>
<tr>
<td>Education</td>
<td>**</td>
<td>**</td>
</tr>
<tr>
<td>No schooling</td>
<td>42 (23.2%)</td>
<td>**</td>
</tr>
<tr>
<td>Less than high school</td>
<td>123 (68%)</td>
<td>**</td>
</tr>
<tr>
<td>More than high school</td>
<td>16 (8.8%)</td>
<td>**</td>
</tr>
<tr>
<td>Married</td>
<td>138 (76.2%)</td>
<td>904 (63%)</td>
</tr>
<tr>
<td>Number of dependents</td>
<td>2.6 (2.1)</td>
<td>**</td>
</tr>
</tbody>
</table>
The Study: Results

<table>
<thead>
<tr>
<th>Variable</th>
<th>Number (%) or (SD)</th>
<th>Number (%) from Rana Plaza</th>
</tr>
</thead>
<tbody>
<tr>
<td>Currently unemployed</td>
<td>151 (83.4%)</td>
<td>1058 (73.7%)</td>
</tr>
<tr>
<td>Average hours of work per week</td>
<td>80.7 (18.7)</td>
<td></td>
</tr>
<tr>
<td>Job class</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Super/Tech/Eng</td>
<td>78 (43.1%)</td>
<td></td>
</tr>
<tr>
<td>Worker</td>
<td>103 (56.9%)</td>
<td></td>
</tr>
<tr>
<td>Days of hospital stay</td>
<td>24.5 (46.1)</td>
<td></td>
</tr>
<tr>
<td>Received counseling</td>
<td>67 (37.0%)</td>
<td></td>
</tr>
</tbody>
</table>
The Study: Results

<table>
<thead>
<tr>
<th>Characteristics of the Injuries</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>Number (%) or (SD)</td>
</tr>
<tr>
<td>Superficial</td>
<td>54 (29.8%)</td>
</tr>
<tr>
<td>Fracture</td>
<td>86 (47.5%)</td>
</tr>
<tr>
<td>Dislocation/Sprain/Strain</td>
<td>42 (23.2%)</td>
</tr>
<tr>
<td>Amputation</td>
<td>9 (5%)</td>
</tr>
<tr>
<td>Concussion/Internal injury</td>
<td>42 (23.2%)</td>
</tr>
<tr>
<td>Crush injury</td>
<td>94 (51.9%)</td>
</tr>
</tbody>
</table>
The Study: Results

- PTSD rates were 60.22% throughout

<table>
<thead>
<tr>
<th>Variable</th>
<th>OR</th>
<th>L Cl</th>
<th>U Cl</th>
</tr>
</thead>
<tbody>
<tr>
<td>Married</td>
<td>3.23</td>
<td>1.3</td>
<td>8.04</td>
</tr>
<tr>
<td>&gt;70 hrs</td>
<td>2.44</td>
<td>1.13</td>
<td>5.26</td>
</tr>
<tr>
<td>Job Class</td>
<td>2.6</td>
<td>1.23</td>
<td>5.59</td>
</tr>
<tr>
<td>Concussion</td>
<td>3.68</td>
<td>1.38</td>
<td>9.81</td>
</tr>
</tbody>
</table>
The Study: Results

- WHODAS score was also correlated with injury
  - Coef 0.975, P>t0, (95%CI 0.765-1.19), Prob>F0
Discussion: PTSD suggested remedies

- Over 60% have PTSD
  - Mental health is a growing issue
  - Receiving counseling was not significant
- Train ground individuals in grade A interventions
- Association between physical disability and PTSD
- Significant Factors
  - Concussion
  - Marital status
  - Job class/work hours
- Increased mental health awareness
- Prevention
Discussion: Compensation

- 83% are unemployed
  - Those employed received training from CRP
- 1 individual states compensation for all medical costs
  - CRP operates through donations
- Few have received the compensation promised to them
Limitations/Other Considerations

- Larger portion of males than Rana Plaza population (5%)
- Convenience sampling
- DSM-IV vs DSM-V
- Heavily studied group
- PCL-S we used a cut-off of 50
  - 40 and 45 as the cut-off
    - PTSD levels were higher 80.11% and 75.69% respectively
    - Gender was significantly correlated with PTSD
    - Education was a bigger factor
- WHODAS was not included in our multivariable model due to overcorrection of emotional disability
Acknowledgements

- Centre for Rehabilitation of the Paralyzed for proving the logistics, access to the study subjects and reviewing all study survey questionnaires
- Deutsche Gesellschaft fuer Internationale Zusammenarbeit (GIZ) for partially funding the research and also reviewing some study survey questionnaires
- The student interviewers from CRP who helped in collecting data
- Dr. Alamgir who was my mentor and advisor for the project
- UTHSCSA and UT Houston


Works Cited


18. Bangladesh factory collapse (MUNIR UZ ZAMAN/AFP/Getty Images)

19. A worker who survived a fire that swept through a small garment factory in the Bangladeshi capital of Dhaka, on Jan. 26, 2013. Photo by Munir uz Zaman/AFP/Getty Images

20. (AP Photo/ A.M. Ahad)

21. (AP Photo/Ismail Ferdous)

22. (LDK Group)