Prevalence of ASD in Prisons

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Outline

• Research on one screening instrument
• Review prevalence literature: 4 prevalence studies
Background

• Concerns possible high rates/under-diagnosis in prisons (Hawes 2003, Myers 2004, Ashworth BMJ 2016)

• Community prevalence 1% adults (Brugha et al 2011), higher in men 1.8% (Brugha 2009)
Prevalence Studies

• Representative sample

• Reliable and valid assessments

Is a tool designed to screen for ASD in prisons effective in the Scottish prison population?
Screening Instrument

- Wing L., Howlin P., Cullen C., Crocombe J., Brugha T, Mills R.

- Based on Asperger Syndrome (and High Functioning Autism) Diagnostic Interview (ASDI)(Gillberg 2001)

- Prison officers, 20 items, 1.5 minutes
Validation

• Adult Autism Spectrum Quotient (AQ) (Baron-Cohen et al);
• Asperger Syndrome (and High-Functioning Autism) Diagnostic Interview (ASDI) (Gillberg et al, 2001)
• Ekman 60 faces Test (Young et al, 2002, Sprengelmeyer et al 2006)
Adult Autism Spectrum Quotient (AQ)
(Baron-Cohen et al 2001)

• 50 item self-report questionnaire
• Mild autistic traits in adults of normal intelligence
• 80% ASD 32+/ 2% random controls in general population
  Level where further ix recommended by authors
• Not designed for forensic populations, evidence for use forensic secure services
Asperger Syndrome (and High-Functioning Autism) Diagnostic Interview (ASDI)

• Structured clinical interview
• First-degree relative
The Ekman 60 Test
Facial Emotion Recognition (Young et al., 2002; Sprengelmeyer et al., 1996)

Anger
Happiness
Fear
Sadness
Surprise
Disgust
Methods

• Staff screened prisoners on wings
• Scored tool
• Interview group scoring above cut-off on tool with measures
• Compare with those scoring 0
• Interview within a week
Results

12 publicly-run prisons
↓
2458 screened (40%)
↓
126 interviews (AQ and Ekman)
↓
44 relative interviews (ASDI)
Screening Tool Scores (All Prisons)

N=2458
Median 0
IQ range 0-2
4% (98) 5 or more
Reliability ICC<0
Summary of screening tool, AQ and ASDI results

- Total number of prisoners interviewed: 127
  - 32 positive
  - 95 negative
  - 1 refused AQ

- AQ results:
  - 2 AQ positive
  - 29 AQ negative
  - 5 AQ positive
  - 99 AQ negative

- Number of interviews with relatives (ASDI) and result:
  - 1 ASDI (negative)
  - 8 ASDI (negative)
  - 2 ASDI (negative)
  - 33 ASDI (negative)
Adult Autism Quotient (AQ) Score

Mean 20.1 (6-41)

7 of 126 (5.7%) scored 32 or above
Screening Tool

- Correlated with AQ $r_s = 0.177$ (p<0.05), ASDI $r_s=0.470$ (p<0.01)
- No correlation IQ or Ekman

Where AQ 32 or more = case

- **Sensitivity** (true positive rate- how many with condition are identified) **28.6%**
- **Specificity** (true negative rate- how many without condition are correctly identified) **75.6%**
Screening Tool

AUC 59.6%

At cut-off of 5:
sensitivity 28.6%
specificity 75.6%
Conclusions

• Low sensitivity for finding those with AQ over 32
• Not recommended
• 7 of 126 (total interviewed, selected group) scored 32 or above on AQ 5.7%
• No positive ASDI (44) even in those scoring over 32 on AQ (9)
• Still no effective validated screening tool
Ginsberg 2010

• ADHD prevalence study
• High-secure prison Sweden
• 30 men with ADHD
• 7 ASD
Fazio et al 2012

- US high-secure prison study
- AQ
- N= 431 men
- Cut-off score ≥32
- 4.4% scored 32 or above
240 male prisoners in London, including staff/self-referral AQ-20 screen; if scored ≥ 10:

- Autism Diagnostic Observation Schedule (adapted) (ADOS) (Lord et al. 1989)
- Autism Diagnostic Interview (ADI-R) (Lord et al 1989) - with parent

‘ASD’ if met criteria on ADOS and ADI (if carried out)

Or if neither carried out but had diagnosis in record
Underwood Results

- **39 / 240 (16%)** scored ≥ 10 on AQ-20 (‘significant autistic traits’)

- **32 / 39** assessed: **11** met criteria (8 ADOS no ADI, 1 ADOS +ADI, 2 previous diagnoses)

- **70%** who screened + AQ-20 didn’t meet criteria (false positive)
Underwood Results

General prison population

- **10%** screen positive, **2%** met diagnostic criteria – similar to male population (80% false positive)
- No difference in mean AQ score in comparison with male population sample
Underwood Conclusions

- not higher rates in prison than community
- If 2% around 1600 men and 120 women
- Adaptation of ADOS not validated
Loureiro et al 2018

- High-security male prison Portugal
- AQ
- n=101
- Comparison with control group (age, sex, education matched)
- Prisoners scored more highly than controls OR1.13
- Mean score 20.6 v 18.1
Young et al 2018

- 390 male prisoners one prison in Scotland
- AQ
- cut-off $\geq 26$: 8.5%
  $\geq 32$ 2.1%
- ‘Prevalence rate of 9% ASD’ in prison
## Summary

<table>
<thead>
<tr>
<th>Authors/date</th>
<th>n</th>
<th>AQ cut off</th>
<th>% sample above</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fazio et al 2012</td>
<td>431</td>
<td>AQ ≥32</td>
<td>4.4%</td>
</tr>
<tr>
<td>Underwood et al 2016</td>
<td>240</td>
<td>AQ-20 ≥10</td>
<td>10%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2% met diagnostic criteria</td>
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<tr>
<td>Loureiro et al 2018</td>
<td>101</td>
<td></td>
<td>Prisoners higher mean AQ than controls</td>
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<td>≥32</td>
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</tbody>
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Why the variation?

1. Sampling

• Selection bias - convenience sample, representative? (all men)
• Small samples
Why the variation?

2. Screening/ diagnostic methods

• Self-report (bias, over-estimates)
• AQ as screen: validity in prison and even community (Ashwood et al 2016 scores non-prediction of dx n=476)
• AQ used as diagnosis, different cut-offs 32 or 26
• ADOS adjusted/not validated for prison
Conclusions

• Several studies attempting to measure prevalence
• Methodological limitations- challenges of environment
• Significant variation in estimates
References


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