Characteristics of Offenders with Neurodevelopmental Disorders

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Outline of Presentation

• Overview of Neurodevelopmental disorders (ND)
• Offenders with ND in Prison
• Offenders with ND in the Court setting
• Implications for Research & Practice
Neurodevelopmental disorder

- Onset in the developmental period

- Include Intellectual Disability (ID), Attention Deficit and Hyperactivity Disorder (ADHD), Autism Spectrum Disorders (ASD), Communication disorders, Specific learning disorders, Tic disorders

- Impairments of personal, social, academic or occupational functioning

- Symptoms of excess as well as deficits
Autism Spectrum Disorders

- Affects 1 per 100
- Boys more than girls.
- Spectrum of conditions
Intellectual Disability

- A significantly reduced ability to understand new or complex information or to learn new skills (IQ of 70 or less)
- A reduced ability to cope independently
Criteria for ADHD

- Persistent pattern of inattention and/or hyperactivity-impulsivity that interferes with functioning or development
- Symptoms present prior to 12 years
Biology of ND: Difference in brain structure

- ADHD boys had grey matter volume reduction in right posterior cerebellum.

- ASD boys had grey matter volume enlargement in left MTG/STG (Lim et al., 2015, Psych Med, 45, 965-976).
Biology of ND: Difference in neurobiological functioning

**ASD**
- glutamate/
  GABA imbalance

**ADHD**
- catecholamine/
  dopamine/ nicotine imbalance
Presentation across NDs

• Social Impairment

• Cognitive Impairment

• Emotional regulation
Social & Environmental Risk Factors

- Social deprivation
- Early adversity & Trauma
- Educational Disengagement
- Peer Group – susceptible to bullying & negative peer pressure
- Rejection
Influence of Neurodevelopment on Youth Crime (Hughes, Williams, Chitsabesan et al, 2012)

<table>
<thead>
<tr>
<th>ND Condition</th>
<th>Prevalence rates: Young People in General Pop. (%)</th>
<th>Prevalence rates: Young People in Custody (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADHD</td>
<td>1.7-9</td>
<td>12</td>
</tr>
<tr>
<td>ASD</td>
<td>0.6-1.2</td>
<td>15</td>
</tr>
<tr>
<td>ID</td>
<td>2-4</td>
<td>23-32</td>
</tr>
<tr>
<td>FASD</td>
<td>0.1-5</td>
<td>10.9-11.7</td>
</tr>
<tr>
<td>TBI</td>
<td>24-31.6</td>
<td>65.1-72.1</td>
</tr>
</tbody>
</table>
Young Violent Offenders with ND
(Billstedt et al., 2017)

- 270 Young Offenders in one region of Swedish Prison & Probation service
- Age: 18 to 25 years
- Sentenced ‘hands on violent’ offences
  - 63% ADHD in childhood
  - 43% ADHD in adult life
  - 10% ASD
  - 1% ID
ND Group v. No ND
(Billstedt et al., 2017)

- Earlier onset of conduct disorder/antisocial behaviour
- Younger age for first crime (12.5 v 13.9 yrs.) & truancy
- Lower school achievement
- Higher exposure to parental substance/alcohol misuse
Overlap between NDs in Young Offenders
(Billstedt et al., 2017)

• One ND - 40%
• Two NDs – 9%
• Three NDs – 1%
• ASD Group: 50% had ADHD
• ADHD Group: 11% met criteria for ASD
Crossing the Divide Research

Murphy et al, 2018

- Young People with ASD & ADHD have significant needs during transition
- Mostly undiagnosed even when in contact with clinical services
- As they transition their contact with treatment & support services reduce
- Largest determinant of service contact is age not need
Prevalence of ADHD in Prison populations

- Prevalence of adult ADHD in detention settings was 26.2% (95% CI: 22.7-29.6) (Baggio et al., 2018)
- X8 more aggressive incidents than other prisoners (Young et al., 2011)
- X6 more aggressive incidents than prisoners with Personality Disorder
Prevalence of ID in Prison

• 10 prison survey across 4 countries of 12,000 inmates found prevalence of 0.5 to 1.5% with range 0.5 to 2.8% (Fazel et al., 2012)

• Prevalence of 10.8% in Norway (Søndenaa et al., 2008, JIDR)

• ‘No One Knows’ Prevalence study of UK prisons (Talbot, 2007) & (Murphy et al., 2015)
  – 7% with IQ < 70
  – 23% with IQ < 80
Prevalence of ASD in Prison

- ASD was found in 2-18% of adult & juvenile Forensic populations (Rutten et al., 2017)
- 4.4% with Autistic Traits in Maximum secure prison in USA (Fazio et al., 2012)
- Scottish prison service: 0.93% with ASD (Robertson et al., 2012)
Challenges in Prison system

• Less likely to benefit from Prison Treatment Programmes
• Less likely to access wider occupational & other activities
• ? Increase in vulnerabilities
England & Wales

<table>
<thead>
<tr>
<th>Population</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total population</td>
<td>83,364</td>
</tr>
<tr>
<td>Male population</td>
<td>79,481</td>
</tr>
<tr>
<td>Female population</td>
<td>3883</td>
</tr>
</tbody>
</table>

Prison Population rates:
- UK = 140
- Norway = 63
- NZ = 214
Aims of Study

• Best approach to screening & assessment
• Extent to which neurodevelopmental disorders go unrecognized in prison
• Extent of mental health problems among those with neurodevelopmental disorders
Eligibility Criteria

• Brixton Prison in April 2012 moved from a Remand to a Resettlement category C Closed Prison
• A prisoner at HMP Brixton
• Able to give informed consent
• Number of prisoners = 798
• Aim to screen = 300
Study setting

• Healthcare services provided by;
  • GPs, nurses, mental health nurses and a psychiatric ‘outreach’ service

• No routine screening for neurodevelopmental disorders.

• No assessment apart from self-report and a brief test in the Education department - results not shared with healthcare or other services.
Screening for ND

- **ADHD**: 6 item screening tool for ADHD – WHO Adult ADHD self-report scale (Kessler et al., 2005)
- **ASD**: 20 item AQ then added 10 item AQ (much lower sensitivity in forensic populations)
- **LDSQ** – LD Screening Questionnaire (McKenzie et al., 2012)
- Sensitivity & Specificity about 80%
Diagnostic Assessments

- **ADHD**: DIVA (Diagnostic Interview for ADHD in Adults; Kooij, 2010)
- **ASD**: if screen positive then will undertake ADOS and ADI
- **ID**: Quick Test
Mental Health Assessment

• **Mini International Neuropsychiatric Interview Plus:** Assessed for comorbid mental health conditions & substance abuse using (MINI Plus; Sheehan et al. 1998)

• Covers 22 DSM-IV/ICD-10 Diagnoses
Recruitment of Prisoners

Refused: 107
Unable to understand English: 27
Advised not to approach: 3
Lacked capacity: 1

Not recruited
n=138

Approached
N=378

Recruited/screened
n=240

Screened positive
n=87
No NDD
n=153

Diagnostic assessment
n=84

Met diagnostic criteria
n=70

ADHD:
ASRS
n=65
DIVA
n=56
Adult ADHD
n=54

ASD:
AQ-20
n=46
ADOS
n=36
ASD
n=12

ID:
LDSQ
n=33
Mild/borderline ID
n=24

Quick Test
n=30

## Age & Ethnicity
### ND v No ND

<table>
<thead>
<tr>
<th>Age at 10 year intervals</th>
<th>No ND (n=77)</th>
<th>ND (n=61)</th>
</tr>
</thead>
<tbody>
<tr>
<td>20-29</td>
<td>36.4%</td>
<td>57.4%</td>
</tr>
<tr>
<td>30-39</td>
<td>29.9%</td>
<td>19.7%</td>
</tr>
<tr>
<td>40-49</td>
<td>27.4%</td>
<td>18%</td>
</tr>
<tr>
<td>50 +</td>
<td>9.1%</td>
<td>4.9%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th>No ND (n=77)</th>
<th>ND (n=61)</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>48.1%</td>
<td>78.7%</td>
</tr>
<tr>
<td>Afro-Caribbean</td>
<td>44.2%</td>
<td>13.1%</td>
</tr>
<tr>
<td>Asian or other</td>
<td>7.8%</td>
<td>8.2%</td>
</tr>
</tbody>
</table>
## Socio-Economic status

**ND v. No ND**

<table>
<thead>
<tr>
<th></th>
<th>ND (n=87)</th>
<th>No ND (n=153)</th>
<th>OR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not in a relationship</td>
<td>60 (69%)</td>
<td>78 (51%)</td>
<td>2.14 (1.17 to 3.89)</td>
</tr>
<tr>
<td>Homeless</td>
<td>20 (23%)</td>
<td>13 (9%)</td>
<td>3.7 (1.59 to 8.61)</td>
</tr>
<tr>
<td>Not in employment or study</td>
<td>64 (74%)</td>
<td>77 (50%)</td>
<td>2.57 (1.4 to 4.74)</td>
</tr>
<tr>
<td>Unable to read and write</td>
<td>17 (20%)</td>
<td>8 (5%)</td>
<td>3.96 (1.52 to 0.37)</td>
</tr>
<tr>
<td>No qualifications (GCSEs or equivalent)</td>
<td>62 (74%)</td>
<td>74 (50%)</td>
<td>2.48 (1.32 to 4.65)</td>
</tr>
</tbody>
</table>
### Offending Characteristics: ND v. no ND

<table>
<thead>
<tr>
<th>Nature of offence</th>
<th>No ND (n=76)</th>
<th>ND (n=62)</th>
<th>X²</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sexual Offence</strong></td>
<td>23.9% (n=17)</td>
<td>34.5% (n=20)</td>
<td>X²=1.73</td>
<td>p=0.188</td>
</tr>
<tr>
<td><strong>Violence against the person</strong></td>
<td>18.3% (n=13)</td>
<td>15.5% (n=9)</td>
<td>X²=1.77</td>
<td>p=0.675</td>
</tr>
<tr>
<td><strong>Drug Offences</strong></td>
<td>14.1% (n=10)</td>
<td>6.9% (n=4)</td>
<td>X²=1.71</td>
<td>p=0.192</td>
</tr>
<tr>
<td><strong>Firearms</strong></td>
<td>5.6% (n=4)</td>
<td>3.4% (n=2)</td>
<td>X²=0.344</td>
<td>p=0.558</td>
</tr>
<tr>
<td><strong>Robbery</strong></td>
<td>5.6% (n=4)</td>
<td>8.6% (n=5)</td>
<td>X²=0.44</td>
<td>p=0.508</td>
</tr>
</tbody>
</table>
Unrecognised ND among the 87 participants who screened positive

- 49% (n=43) screened positive for ND had NOT been previously recognised prior to prison
- Those who were unrecognised were more likely to be identified as BME (35% v 16% p=0.0042)
- Those who were unrecognised were more likely to be able to both read & write (93% v. 68% p=0.0003)
- Not recognised previously:
  80% ASD, 58% ADHD, 6% ID
Comorbidity of ND (n=61)

- ADHD = 63%
- ID = 10%
- ASD = 8%
- ADHD & ID = 8%
- ADHD & ASD = 8%
- ASD & ID = 3%
- ID & ASD = 3%
- ADHD & ID & ASD = 3%

- ADHD
- ID
- ASD
- ADHD & ID
- ADHD & ASD
- ASD & ID

Note: The percentages may not sum up exactly due to rounding.
# Rates of Self-harm & Suicide in Prisoners with ND

<table>
<thead>
<tr>
<th></th>
<th>No ND (n=77)</th>
<th>1 ND (n=48)</th>
<th>OR (95%CI) for ND vs. 1 ND</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thought about Self Harm</td>
<td>3 (3.9%)</td>
<td>15 (31.3%)</td>
<td>11.21 (3.04-41.48)</td>
</tr>
<tr>
<td>Self harmed</td>
<td>1 (1.3%)</td>
<td>7 (14.3%)</td>
<td>12.67 (1.51-106.47)</td>
</tr>
<tr>
<td>Thought about suicide</td>
<td>3 (3.9%)</td>
<td>13 (27.1%)</td>
<td>9.16 (2.24-34.23)</td>
</tr>
<tr>
<td>Attempted Suicide</td>
<td>0</td>
<td>3 (6.1%)</td>
<td>0.38 (0.30-0.47)</td>
</tr>
<tr>
<td>Life Time attempted</td>
<td>10 (13%)</td>
<td>29 (59.2%)</td>
<td>9.71 (4.05-23.31)</td>
</tr>
</tbody>
</table>
## Current Mental Illness in Prisoners with ND

<table>
<thead>
<tr>
<th>Mental Disorder</th>
<th>No ND (N=77)</th>
<th>1 ND (N=48)</th>
<th>OR (95%CI) no ND vs. 1 ND</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psychosis</td>
<td>3 (3.9%)</td>
<td>2 (4.1%)</td>
<td>1.05 (0.17-6.52)</td>
</tr>
<tr>
<td>Depression</td>
<td>5 (6.5%)</td>
<td>7 (14.3%)</td>
<td>2.40 (0.712-8.04)</td>
</tr>
<tr>
<td>Manic</td>
<td>4 (5.2%)</td>
<td>9 (18.4%)</td>
<td>4.11 (1.19-14.18)</td>
</tr>
<tr>
<td>Anxiety</td>
<td>16 (20.8%)</td>
<td>23 (46.9%)</td>
<td>3.37 (2.13-9.47)</td>
</tr>
<tr>
<td>PTSD</td>
<td>4 (5.2%)</td>
<td>4 (8.2%)</td>
<td>1.62 (0.387-6.81)</td>
</tr>
</tbody>
</table>
### Other comorbidities in Prisoners with ND

<table>
<thead>
<tr>
<th>Mental Disorder</th>
<th>No ND (N=77)</th>
<th>1 ND (N=48)</th>
<th>OR (95%CI) for ND vs. 1 ND</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antisocial PD</td>
<td>21 (27.3%)</td>
<td>33 (67.3%)</td>
<td>5.50 (2.52-11.99)</td>
</tr>
<tr>
<td>Substance Use Disorder</td>
<td>24 (31.2%)</td>
<td>21 (42.9%)</td>
<td>1.66 (0.79-3.48)</td>
</tr>
</tbody>
</table>
What does this tell on how to support Offenders with ND

• Not identified early in the criminal justice system

• Prisoners with ND are social excluded group

• Very vulnerable in terms of health & well-being in prison
Court Liaison & Diversion Service
Study: London, UK

- Early identification & assessment
- Assistance, support and advice to a number of court stakeholders
- Facilitating continuity of care by assisting engagement in community based services
- Short-term intervention
## Prevalence of ND in London & Surrounding Courts

<table>
<thead>
<tr>
<th></th>
<th>Outer London Courts (N= 8636)</th>
<th>South London Court (N = 452)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADHD</td>
<td>1.2% 100</td>
<td>2.2% 10</td>
</tr>
<tr>
<td>ID</td>
<td>3.8% 324</td>
<td>5.5% 25</td>
</tr>
<tr>
<td>ASD</td>
<td>0.9% 79</td>
<td>4.6% 21</td>
</tr>
</tbody>
</table>
Practice Implications

• Early Recognition of Young offenders with ND
• Early Screening & Assessment of Adult Offenders for ND
• Responsive Criminal Justice System
  Should prisoners with ND be diverted to more appropriate therapeutic options or provide therapeutic option in prison
Practice Implications

• Improved services to young offenders through health, education & family support
• Improved engagement for Adults with Health, Employment & reduced Social isolation
• Specific Treatment – for ADHD
• Specific Interventions – in the Community
Evidence for Treatment of Offender Groups

Lichtenstien et al NEJM 2012

• Medication for Attention Deficit Hyperactivity Disorder and Criminality.
• Observational study using Swedish National Registers
• 25,656 patients with a diagnosis of ADHD

• 32% reduction in criminality for men, 41% for women when on medication
• Stimulant and non stimulants both reduced criminality.
A Pilot study of Concerta XL In Adult Offenders with ADHD: CIAO project
Professor Philip Asherson. Institute of Psychiatry Psychology and Neuroscience, London

• A 12-week open label pilot study of Concerta XL with 72 participants aged 18-30 years
• To evaluate the effectiveness of Concerta XL
  – reducing levels of aggression using MOAS
  – increasing engagement with educational activities
  – reduced symptoms of ADHD
• Not conclusive so undertaking a larger study of 200+ (CIAO-II)
Intellectual Disability Compulsory Care and Rehabilitation (IDCCR) Act 2003 – New Zealand

• Provisions of compulsory care and rehabilitation to individuals with an ID who had been charged with, or convicted of an imprisonable offence.

• Two categories of care:
  – A Special care recipient must receive care and rehabilitation in a secure facility so effectively a hospital
  – A Care recipient who can receive care in a secure facility or in a supervised setting

• Regional Community Forensic ID teams of nursing, OT, psychology and psychiatry input were set up

• Seamless care from secure hospital care to supported independent living
Implications for Research

• Which are the best screening tools for NDs & how do work in different settings

• Does early identification effect outcomes & which outcomes:
  – Health
  – Offender
  – Quality of Life

• What are the Treatments/Interventions that work

• What Legislation & Policy is effective for:
  – the Person
  – Society
Research Team

- Professor Eddie Chaplin, London South Bank University, UK
- Dr Lisa Underwood & Hannah Hayward, Research workers, FANS Department, King’s College London, UK
- Dr Andrew Forrester, Consultant Forensic Psychiatrist & South London & Maudsley NHS Foundation Trust, UK
- Professor Philip Asherson, King’s College London, UK
- Professor Susan Young, Imperial College London, UK
- Dr Richard Mills, R & D Director, National Autistic Society, UK
- Professor Declan Murphy, Forensic & Neurodevelopmental Sciences Department, King’s College London, UK
References


References


THANKS FOR LISTENING

ANY QUESTIONS?