Introduction, Nosology, and History

William W. Eaton, PhD
Johns Hopkins University
Nosology

Target outcomes

Recent evolution of diagnosis

Epistemology and epidemiology

The problem of onset
History

Generations in psychiatric epidemiology

Diagnosis in surveys

Screening
Section A

Introduction and Nosology
<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Lifetime prevalence</th>
<th>Inter-quartile range</th>
<th>Number of studies</th>
<th>Annual incidence per 1000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autism</td>
<td>0.05</td>
<td>0.04-0.10</td>
<td>23</td>
<td>NA</td>
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<tr>
<td>Attention Deficit</td>
<td>6.2</td>
<td>2.2-6.7</td>
<td>6</td>
<td>NA</td>
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<tr>
<td>Conduct Disorder</td>
<td>5.4</td>
<td>NA</td>
<td>1</td>
<td>NA</td>
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<td>Eating Disorders</td>
<td>1.2</td>
<td>1.0-2.8</td>
<td>7</td>
<td>0.18</td>
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<td>Agoraphobic Disorder</td>
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<td>3.6-5.7</td>
<td>7</td>
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<td>Panic Disorder</td>
<td>1.6</td>
<td>1.1-2.2</td>
<td>11</td>
<td>1.4</td>
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<tr>
<td>Social Phobic Disorder</td>
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<td>1.7-2.7</td>
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<td>4.0</td>
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<td>10.7-15.9</td>
<td>15</td>
<td>17.9</td>
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<td>Major Depression</td>
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<td>8.4-16.0</td>
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<td>3.0</td>
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<tr>
<td>Schizophrenia</td>
<td>0.3</td>
<td>0.16-0.56</td>
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<td>Bipolar Disorder</td>
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<td>0.4-0.8</td>
<td>9</td>
<td>0.3</td>
</tr>
<tr>
<td>Dementia</td>
<td>4.9</td>
<td>3.6-7.2</td>
<td>23</td>
<td>6.0</td>
</tr>
</tbody>
</table>

Data from: Eaton (2001), The Sociology of Mental Disorders, 3rd ed.
Lifetime prevalence

**Prevalence**: proportion of the population with the disorder

- **Lifetime**– proportion who have, or have ever had, the disorder
- **Point**– proportion who have the disorder now
- **Period**– proportion who have the disorder during a stated period of time
**Incidence**: rate at which new cases form

- **Attack Rate** — rate at which cases form, during a stated period of follow-up, from a population of individuals who do not have the disorder at baseline

- **First Lifetime Incidence** — rate at which cases form, during a stated period of follow-up, from a population of individuals who have never had the disorder at baseline
Stress-Reactive Neurosis

- Anxiety
- Dysthymia
- Agoraphobia
- Panic
- Dysthymia
- Anxiety

Stress
Definitions for Epistemologic Approach

Syndrome
★ *Co-occurrence of signs and symptoms*

Reliability
★ *Consistency of measurement*
Syndrome
★ Co-occurrence of signs and symptoms

Reliability
★ Consistency of measurement

Validity
★ Measuring what is supposed to be measured

Continued
Definitions for Epistemologic Approach

Syndrome
★ Co-occurrence of signs and symptoms

Reliability
★ Consistency of measurement

Validity
★ Measuring what is supposed to be measured

Construct validity
★ Agreement with theoretical predictions across a range of theories, and across a range of modalities of measurement
Epistemology and Epidemiology

Disease Perspective
Clinical Entity ← Pathological Condition ← Etiology

Dimensional Perspective
Potential ← Provocation ← Response

Behavior Perspective
A. Driven Behaviors:
Choice
Physiological Drive ← Conditioned Learning

B. Socially Learned Behaviors:
Antecedents ← Responses ← Consequences

Life–Story Perspective
Setting ← Sequence ← Outcome

Adapted from: McHugh and Slavney, The Perspectives of Psychiatry, 3rd edition
<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Reliability DSM-III-R</th>
<th>Reliability ICD-10</th>
<th>Chemical Treatment</th>
<th>Psychosocial Treatment</th>
<th>Recurrence Risk in MZ Twins</th>
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<tbody>
<tr>
<td>Disorders of children</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Autism</td>
<td>NA</td>
<td>.90</td>
<td>◦</td>
<td>◦</td>
<td>2,555.0</td>
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<tr>
<td>Attention Deficit</td>
<td>0.61</td>
<td>0.83</td>
<td>+</td>
<td>+</td>
<td>3.3</td>
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<td>Disorders of adolescents</td>
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<td></td>
<td></td>
<td></td>
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<td>.90</td>
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<td>+</td>
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<td>.95</td>
<td>?</td>
<td>+</td>
<td>8.0</td>
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<td>Non-psychotic Disorders of Adults</td>
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<td></td>
<td></td>
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<td>0.80</td>
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<td>+</td>
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<td>0.64</td>
<td>+</td>
<td>+</td>
<td>4.0</td>
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<tr>
<td>Social Phobic Disorder</td>
<td>0.47</td>
<td>0.79</td>
<td>+</td>
<td>+</td>
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<td>+</td>
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<td>Antisocial Personality</td>
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<td>◦</td>
<td>◦</td>
<td>NA</td>
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<td>Major Depressive Disorder</td>
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<td>0.73</td>
<td>+</td>
<td>+</td>
<td>1.7</td>
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<td>Psychotic Disorders of Adults</td>
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<td></td>
<td></td>
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<tr>
<td>Schizophrenia</td>
<td>0.65</td>
<td>0.88</td>
<td>+</td>
<td>+</td>
<td>48</td>
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<td>Bipolar Disorder</td>
<td>0.84</td>
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<td>+</td>
<td>◦</td>
<td>60</td>
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<td>Disorders of the elderly</td>
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<td>Dementia</td>
<td>0.83</td>
<td>NA</td>
<td>?</td>
<td>◦</td>
<td>NA</td>
</tr>
</tbody>
</table>
Prevalence of Disorder in Past Six Months

ECA Program

Data from: Eaton (1994), Int J Methods Psychiatr Res.
Prevalence of Disorder in Past Six Months

ECA Program

Data from: Eaton (1994), Int J Methods Psychiatr Res.,
### Symptom Groups Related to Depressive Disorder

#### Lifetime Prevalence in Percent

<table>
<thead>
<tr>
<th>Any occurrence ever</th>
<th>Worst Episode of Depression</th>
</tr>
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<tbody>
<tr>
<td><strong>Dysphoric Episode</strong></td>
<td>27.9</td>
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<tr>
<td><strong>Anhedonia</strong></td>
<td>9.3</td>
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<tr>
<td><strong>Appetite</strong></td>
<td>20.7</td>
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<td><strong>Sleep</strong></td>
<td>22.1</td>
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<td><strong>Slow or restless</strong></td>
<td>9.8</td>
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<tr>
<td><strong>Fatigue</strong></td>
<td>17.1</td>
</tr>
<tr>
<td><strong>Guilt</strong></td>
<td>6.3</td>
</tr>
<tr>
<td><strong>Concentration</strong></td>
<td>11.7</td>
</tr>
<tr>
<td><strong>Thoughts of Death</strong></td>
<td>21.0</td>
</tr>
</tbody>
</table>

**Episode of Depressive Syndrome:**

- Symptoms in 1 or more groups: 12.0
- Symptoms in 2 or more groups: 11.8
- Symptoms in 3 or more groups: 10.6
- Symptoms in 4 or more groups: 9.6
- Symptoms in 5 or more groups: 7.6

*Source: Baltimore Epidemiologic Catchment Area Followup*
Epistemology and Epidemiology

Disease Perspective
Clinical Entity ↔ Pathological Condition ↔ Etiology

Dimensional Perspective
Potential ↔ Provocation ↔ Response

Behavior Perspective
A. Driven Behaviors:
Physiological Drive ↔ Choice ↔ Conditioned Learning

B. Socially Learned Behaviors:
Antecedents ↔ Responses ↔ Consequences

Life–Story Perspective
Setting → Sequence → Outcome

Adapted from: McHugh and Slavney, The Perspectives of Psychiatry, 3rd edition
Section B

Onset
Continuities: Incidence as Intensification

Case No. 1
Case No. 2
Case No. 3
Case No. 4
Case No. 5
Case No. 6
Case No. 7
Case No. 8

Adapted by Bill Eaton from Lilienfeld and Stolley (1994), Foundations of Epidemiology, 3rd ed., Continued
For the bottom part of the figure, the threshold of symptom intensity required for diagnosis is:

Case No. 3: Sudden, forceful onset
Case No. 5: Gradual onset from existing symptoms
Sudden intensification, *not* a new case
Sudden intensification in *existing* case

Adapted by Bill Eaton from *Lilienfeld and Stolley (1994)*, *Foundations of Epidemiology, 3rd ed.*
Association of Depressed Mood and Somatic Symptoms of Depression

$r = 0.0$
Acquisition of Symptoms

![Graph showing the relationship between time (years) and depressed mood vs. somatic symptoms with a correlation coefficient of r = 0.](image)

Continued
Acquisition of Symptoms

- Depressed Mood
- Somatic Symptoms
- Precursors
- Prodrome
- Disorder

$\rho = 0$

$\rho = 2$

Time (Years)

5 10 15 20 25

Continued
Acquisition of Symptoms

Depressed Mood vs. Time (Years)

- Somatic Symptoms
- Precursors
- Prodrome
- Disorder

Correlation coefficients: r = 0, r = 2, r = 3

Continued
Acquisition of Symptoms

Depressed Mood

Precursors
Prodrome
Disorder

Somatic Symptoms

Time (Years)

5 10 15 20 25

r = .0
r = .2
r = .3
r = .4
New Syndrome

Depressed Mood

Somatic Symptoms

Precursors

Prodrome

Disorder

Time (Years)

r = 0

r = 2

r = 3

r = 4

r = 5
Concepts For Describing Onset

**Precursor** complaint or behavior

★ A complaint or behavior from the domain of content of a disorder that predicts full onset, but imperfectly

**Prodromal** sign or symptom

★ A sign or symptom from the domain of content of a disorder that predicts full onset, with perfect certainty
“Etiologically Relevant Period” (Rothman)
“Incubation” (Armenian)
Prodromal Period for New Cases

Epidemiologic Catchment Area Program

Cumulative Percent with Onset

Age in Years

Adapted from Eaton, et al. (1995), Am J Psychiatry
Incidence as Change in Causal Structure

Causes | Natural History | Prevalence
---|---|---
A | Incidence | 
B | Duration | Prevalence
C | Recurrence | 

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19th Century—Jarvis Commission

Generation One

- **Facility surveys**
- **Specific diagnoses**
- **Exemplars**
  - Chicago (*Faris and Dunham*)
  - New Haven (*Hollingshead and Redlich*)

Continued
Generations in Psychiatric Epidemiology

Generation Two

★ *Household surveys*
★ *Overall caseness rating*
★ *Exemplars*
  • Midtown Manhattan (Srole, Langner, et al.)
  • Stirling County (Leighton, et al.)

Generation Three

★ *Diagnostic Surveys*
★ *Exemplars*
  • ECA, NCS

Continued
<table>
<thead>
<tr>
<th></th>
<th>Lunatics</th>
<th>Idiots</th>
<th>Total</th>
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<tbody>
<tr>
<td><strong>Paupers</strong></td>
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<td></td>
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</tr>
<tr>
<td>Number</td>
<td>1,522</td>
<td>418</td>
<td>23,125</td>
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<tr>
<td>Prevalence/1000</td>
<td>65.82</td>
<td>18.08</td>
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<tr>
<td><strong>Independents</strong></td>
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<tr>
<td>Number</td>
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<td>671</td>
<td>1,102,551</td>
</tr>
<tr>
<td>Prevalence/1000</td>
<td>1.01</td>
<td>0.61</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number</td>
<td>2,622</td>
<td>1,089</td>
<td>1,124,676</td>
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<tr>
<td>Prevalence/1000</td>
<td>2.33</td>
<td>0.97</td>
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</table>

Data from: Commission on Lunacy, 1855: Table IV, VIII, XIX, XXI, and frequencies, on page 52.
Urban Areas

Adapted from Park and Burgess, “The City”
Manic Depressive Rates in Chicago (1922-1931)
Per 100,000 Adult Population
Estimated 1927 Population

Map showing manic depressive rates in Chicago with different color codes for various rate ranges.
Manic-Depressive Insanity

Manic Depressive Average Rates by Zones and Divisions of Chicago 1922-1934

I. Center: 13.2
II. Transition: 5.9
III. Working: 8.1
IV. Family: 4.4
## Social Class and Mental Disorder in the New Haven Study

### Level of Social Class

<table>
<thead>
<tr>
<th>Level of Social Class</th>
<th>I-II</th>
<th>III</th>
<th>IV</th>
<th>V</th>
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<tbody>
<tr>
<td><strong>Neurosis</strong></td>
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<td></td>
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</tr>
<tr>
<td>Prevalence</td>
<td>3.49</td>
<td>2.50</td>
<td>1.14</td>
<td>0.97</td>
</tr>
<tr>
<td>Incidence</td>
<td>0.69</td>
<td>0.78</td>
<td>0.52</td>
<td>0.66</td>
</tr>
<tr>
<td><strong>Psychosis</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prevalence</td>
<td>1.88</td>
<td>2.91</td>
<td>5.18</td>
<td>15.05</td>
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<tr>
<td>Incidence</td>
<td>0.28</td>
<td>0.36</td>
<td>0.37</td>
<td>0.73</td>
</tr>
</tbody>
</table>

Rates* per 1,000

* Prevalence rate is point prevalence; incidence rate is annual.

Data from: Hollingshead and Redlich, 1958, Table 16.
Social Class and Stress in Manhattan

Mental Health Risk Compared to an Average Person

Lower class
Middle class
Upper class

Stress Score

Redrawn from Figure 14.2 of Langner and Michael, 1963.
73. Have you had two years or more in your life when you felt depressed or sad almost all the time, even if you felt OK sometimes?

☑ NO ........................................... ☑

☐ YES ........................................... ☒

INTERVIEWER: IN Q. 73, DID R TELL DOCTOR?

INTERVIEWER: ASK QS. 74-89. OMIT WORDS IN [ ]. CODE IN COLUMN I.

74. Has there ever been a period of two weeks or longer when you lost [Did you lose] your appetite? CAN BE POSITIVE EVEN IF FOOD INTAKE IS NORMAL.

MD: ________________________ SELF: ________________________

EVER IN LIFETIME [WORST PERIOD]
Question

A¹ Did this bother you enough so that you told a doctor or any other health professional?

A² Did you take medicine for this more than once?

A³ Did this interfere a lot with your life or your activities?

B Was it always caused by using medicine, alcohol, or drugs?

C Every time this occurred were you physically sick or did you have a fever, injury, or physical illness that might have caused it?

Was Probe A¹ “Yes”?

DIS Probe Structure
Coordination of Community and Institution Surveys in ECA Program

**Community Residents**
N≈3000

- Household Population
- + Group Quarters:
  - Halfway Houses
  - Jails
  - General Hospitals
  - Dormitories
  - Etc.

**Institution Residents**
N≈500

- Institutions:
  - Mental Hospitals
  - Prisons
  - Nursing Homes