Perspectives of heavy drinking: Heavy use over time

Antoni Gual

Special thanks to Peter Anderson, Jürgen Rehm & Robin Room
## Conflicts of interest

<table>
<thead>
<tr>
<th>Interest</th>
<th>Name of organisation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Current roles and affiliations</strong></td>
<td>Addictions Unit, Psychiatry Department, Neurosciences Institute, Hospital Clinic, University of Barcelona; IDIBAPS; Vice President of INEBRIA; President of EUFAS</td>
</tr>
<tr>
<td><strong>Grants</strong></td>
<td>Lundbeck, D&amp;A Pharma, FP7, SANCO, FIS, PND.</td>
</tr>
<tr>
<td><strong>Honoraria</strong></td>
<td>Lundbeck, D&amp;A Pharma, Servier, Lilly, Abbvie</td>
</tr>
<tr>
<td><strong>Advisory board/consultant</strong></td>
<td>Lundbeck, D&amp;A Pharma, Socidrogalcohol (Alcohol Clinical Guidelines) 2013</td>
</tr>
</tbody>
</table>
Index

• What is wrong with alcohol in PHC?
• Nothing is written in stone
• Why use HUOT
• Other examples in primary care
• Overcoming a disorder called ‘binaryism’.
What is wrong with alcohol in PHC?

• Strong evidence of the efficacy of BIs
• Strong evidence of the effectiveness of BIs
• Strong evidence of the cost-efficacy of BIs
• Good knowledge of barriers and facilitators
• Good demonstration studies available
• Yet, dissemination and wide implementation are very poor
Why implementation is so poor?

- Professionals are overburdened
- Stigma still plays a relevant role
- Incentives are scarce
- Prevention does not fit into clinical daily work
- The dicotomy between alcoholic and risky drinker is unrealistic and deters from action
Index

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• Overcoming a disorder called ‘binarism’.
Definitions of addictive behaviours

Nothing is Written In Stone
V. PERSONALITY DISORDERS AND CERTAIN OTHER NON PSYCHOTIC MENTAL DISORDERS (301-304)

301. Personality disorders
302. Sexual deviations
303. Alcoholism
304. Drug dependence
EXPERT COMMITTEE ON
ADDITION-PRODUCING DRUGS

Seventh Report

1. Report on the eleventh session of the Commission on Narcotic Drugs of the United Nations Economic and Social Council ........................................ 3
2. Resolutions of the United Nations Economic and Social Council ........................................ 4
3. Reports of the Permanent Central Opium Board and the Drug Supervisory Body ........................................ 4
4. Morphine and its derivatives ........................................ 5
5. Synthetic substances with morphine-like effect ........................................ 6
6. 2,4-Diamino-5-phenylthiazole and 3-ethyl-3-methylglutarimide ........................................ 8
7. Abuse of amphetamines ........................................ 9
8. Definition of habit-forming drugs ........................................ 9
9. Barbiturates ........................................ 10
10. "Tranquilizing" drugs ........................................ 10
11. Bibliography of drug addiction ........................................ 11
12. International non-proprietary names ........................................ 11
Annex. Habit-forming drugs ........................................ 12

WORLD HEALTH ORGANIZATION
PALAIS DES NATIONS
GENEVA

1957
Addiction vs Habituation

**Drug addiction**

Drug addiction is a state of periodic or chronic intoxication produced by the repeated consumption of a drug (natural or synthetic). Its characteristics include:

1. an overpowering desire or need (compulsion) to continue taking the drug and to obtain it by any means;
2. a tendency to increase the dose;
3. a psychic (psychological) and generally a physical dependence on the effects of the drug;
4. detrimental effect on the individual and on society.

**Drug habituation**

Drug habituation (habit) is a condition resulting from the repeated consumption of a drug. Its characteristics include:

1. a desire (but not a compulsion) to continue taking the drug for the sense of improved well-being which it engenders;
2. little or no tendency to increase the dose;
3. some degree of psychic dependence on the effect of the drug, but absence of physical dependence and hence of an abstinence syndrome;
4. detrimental effects, if any, primarily on the individual.
Both definitions are based on the same methodology:
• using multiple criteria describing consequences of heavy consumption
• minimal thresholds for the number of criteria present at the same time

But the concepts used differ:
• dependence, harmful use (ICD 10)
• substance use disorders (DSM 5)
Limitations

• the interpretation of consequences is in part culture-dependent: assessments across countries involve substantial measurement errors

• loss of control has negative connotations in some countries, and relatively positive connotations in others

• many of the consequences chosen as criteria are relatively broad and unspecific (e.g., role failure)
Index

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Substance use as a continuum and “heavy use over time” as construct for public health

Heavy use over time as a new definition

Different types of criteria used in the definitions of addiction:

- Physiological criteria (tolerance, withdrawal);
- Criteria linked to (bio)psychological consequences (e.g., craving via brain processes);
- Criteria linked to social and behavioural consequences, such as “giving up important social, occupational, or recreational activities”;
- Criteria linked to health or physical consequences

In fact, all criteria listed in current definitions have ”heavy use over time” as the major underlying risk factor
Why use HUOT?

• HUOT is responsible for the changes in the brain and other physiological characteristics of SUD
• HUOT is responsible for intoxication and for the withdrawal and tolerance phenomena regarded as central to current definitions of SUD
• HUOT is responsible for the main social consequences of SUD, such as problems in fulfilling social roles
• HUOT is responsible for the majority of the substance-attributable burden of disease and mortality
• HUOT fits better the empirical data, may diminish stigmatization and avoids pointing attention away from highest-risk categories
Why use HUOT?

- It is impossible to distinguish the neurocognitive effects of SUD vs. heavy use because there are no studies on neural effects of substance dependence without prolonged heavy use (Dutch Medical Research Council, Wiers et al., 2012).
- The effect of prolonged heavy use on the brain appears to be at least largely overlapping if not identical with what is called “substance use disorders’
- There is a high correlation between HUOT and number of diagnostic criteria met
DSM-IV and grams of alcohol per day (NESARC data)

Source: Rehm et al 2013
Implications for preventive and clinical interventions

• Can be easily measured in many settings
• Administered either by a professional or through automated systems
• Can be fed back with very little time lag and investment
• Substance use can be monitored as other chronic conditions (i.e. Hypertension, diabetes)
Index

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Blood pressure, fasting plasma glucose (sugar), alcohol: major causes of disability adjusted life years and major risk factors for cardiovascular disease, liver disease, diabetes and cognitive decline

<table>
<thead>
<tr>
<th>2013 leading risks</th>
<th>Mean rank (95% UI)</th>
<th>All age median % change</th>
<th>Age-standardised median % change</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 High blood pressure</td>
<td>1.0 (1-1)</td>
<td>20% (15 to 26)</td>
<td>-13% (-16 to -9)</td>
</tr>
<tr>
<td>2 Smoking</td>
<td>2.6 (2-4)</td>
<td>5% (-1 to 11)</td>
<td>-23% (-28 to -19)</td>
</tr>
<tr>
<td>3 High body-mass index</td>
<td>2.8 (2-5)</td>
<td>26% (22 to 31)</td>
<td>-7% (-11 to -5)</td>
</tr>
<tr>
<td>4 Childhood undernutrition</td>
<td>4.2 (3-6)</td>
<td>-45% (-51 to -39)</td>
<td>-50% (-55 to -44)</td>
</tr>
<tr>
<td>5 High fasting plasma glucose</td>
<td>4.6 (3-6)</td>
<td>31% (25 to 36)</td>
<td>-4% (-8 to 0)</td>
</tr>
<tr>
<td>6 Alcohol use</td>
<td>6.9 (5-9)</td>
<td>6% (2 to 11)</td>
<td>-17% (-20 to -13)</td>
</tr>
<tr>
<td>7 Household air pollution</td>
<td>9.1 (8-12)</td>
<td>-10% (-21 to 2)</td>
<td>-28% (-38 to -18)</td>
</tr>
<tr>
<td>8 Unsafe water</td>
<td>10.4 (8-14)</td>
<td>-37% (-44 to -30)</td>
<td>-43% (-49 to -37)</td>
</tr>
<tr>
<td>9 Unsafe sex</td>
<td>10.8 (8-13)</td>
<td>-3% (-11 to 7)</td>
<td>-20% (-26 to -11)</td>
</tr>
<tr>
<td>10 Low fruit</td>
<td>10.8 (7-16)</td>
<td>7% (1 to 14)</td>
<td>-22% (-26 to -16)</td>
</tr>
<tr>
<td>11 High sodium</td>
<td>11.4 (5-20)</td>
<td>15% (7 to 24)</td>
<td>-16% (-22 to -10)</td>
</tr>
</tbody>
</table>
**Blood pressure:** Blood pressure is continuously distributed in populations, with an asymmetric normal distribution to the right. There is no natural cut-point above which "hypertension" definitively exists and below which, it does not.

*Figure 1. Smoothened weighted frequency distribution, median, and 90th percentile of systolic blood pressure for ages 60–74 years: United States, 1960–1991*

Anderson, P. 2016
**Plasma glucose:** Plasma glucose is close to log-normally distributed in populations, skewed towards the right. There is no natural cut-point above which “diabetes” definitively exists and below which, it does not.

Data from global DETECT-2 project for Taiwan

Anderson, P. 2016
Alcohol: Alcohol consumption is close to log-normally distributed in populations, skewed towards heavy drinking. There is no natural cut-point above which "alcohol dependence" definitively exists and below which, it does not.

Alcohol distribution (grams/day), German men

Anderson, P. 2016
Blood pressure: Disease risk is a continuous (exponential) relationship

Hopkins & Hunt, 2013
Alcohol: Disease risk is a continuous (exponential) relationship

Shield, Parry & Rehm, 2013
Blood glucose: Disease risk (above 5 mmol/L) is a continuous (exponential) relationship

Ischaemic heart disease risk

Anderson, P. 2016
Blood pressure:

Untreated high blood pressure is sometimes associated with a further progressive rise in blood pressure, often culminating in a treatment resistant state due to associated vascular and renal damage.

The vascular and renal damage, though, are a consequence of the high blood pressure.

Anderson, P. 2016
Sugar:

Untreated high blood sugar levels are associated with hippocampal damage, often culminating in increased sugar intake, the hippocampus being a primary brain substrate for control of food and sugar intake.

The hippocampal damage, though, is a consequence of the high blood sugar level.

Anderson, P. 2016
**Sugar:** Relationship between blood glucose levels and human hippocampal volume from New York study

Anderson, P. 2016
Alcohol:

Unmanaged heavy drinking can be associated with even further heavy drinking, often culminating in a more difficult to manage state due to associated brain atrophy.

The brain atrophy, though, is a consequence of the heavy drinking.

Anderson, P. 2016
Alcohol: Relationship between drinking levels and brain volume from Framingham study

Anderson, P. 2016
Blood pressure, sugar and alcohol

• There is no natural cut-point above which "the disease" definitively exists and below which, it does not.
• Disease risk is a continuous (exponential) relationship
• The signs and symptoms that have been attributed to “the disease” are actually the consequences of high levels of the underlying factor (alcohol, sugar or blood pressure)
Alcohol dependence, a redundant concept

The signs and symptoms that have been attributed to alcohol dependence/ alcohol use disorder are actually the consequences of heavy drinking.

Thus, the term “alcohol dependence” is redundant and the term “heavy use over time” is all that is needed.

The redefinition to HUOT is likely to reduce the stigma associated with dichotomous labelling, enhancing the scope for more heavy drinking patients to receive advice and treatment.

Anderson, P. 2016
Index

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The problem of dichotomies

• Most of the definitions have the problem of dichotomizing people as having, or not having, the disease, even though the underlying phenomena are continuous.

• The DSM-5 has begun to move in the latter direction by establishing a continuum of severity, but still the continuum is mainly among those who have the disorder.

• This division into seemingly distinct categories has been found to increase stigmatization.
The two facets of binaryism

Binaryism is a common ‘disorder’ of clinicians and researchers who, in its worse presentation, can only count up to two, (presence or absence of a disease) but not beyond. The main symptom of the ‘disorder’ binaryism is that it confuses disease entities with treatment decisions.

A GP might label certain individuals as ‘cases of alcohol use disorder’, but what is really meant is ‘cases for alcohol use disorder treatment’, for ‘alcohol use disorder’ itself occurs in all grades of severity.

Anderson, P. 2016
Binaryism

The idea of a sharp distinction between health and disease is a medical artefact for which nature, if consulted, provides no support.

Disease is nearly always a quantitative rather than a categorical or qualitative phenomenon, and hence it has no natural definitions.

Anderson, P. 2016
Summary

• Actual definitions of addiction are culturally biased and have limitations
• HUOT has a high correlation with the harm attributable to each substance and captures better the whole dimension of the social cost of addictions
• HUOT shows the reality in the most neutral and less ideological possible form, and this neutral evidence is what is needed at the bottom of the governance of addictions
• HUOT shows the enormous size of the problem, and the fact that a considerable part is avoidable with adequate policies
• The signs and symptoms that have been attributed to alcohol dependence are actually the consequences of heavy drinking. Thus, the term “alcohol dependence” is redundant and the term “heavy use over time” is all that is needed.
alcohol is similar both to blood pressure and to serum cholesterol, which both exist within continua and are risk factors for disease. The higher the level of blood pressure, the greater the risk of cerebrovascular disease and the higher the serum cholesterol level, the greater the risk of coronary heart disease.
That the Royal College of General Practitioners accept that a practical, preventive approach will entail the abandonment of the concept of ‘alcoholism and the alcoholic’ as the core of the problem and that concepts of addiction and dependence furnish few clues to the solution of the problem.
Thanks for your attention

Nothing is Written In Stone