

# Mind and Heart

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## Prevalence of Neuropsychiatric Disorders

- One four people will suffer from a mental or neurological disorder at some point during their lifetime.
- 450 million people are currently affected by these disorders.

ATLAS (WHO 2001)

## Mind and Heart

- The heart and mind meant the same thing in Ancient Egypt.

Ebbell's translation: "ib" = mind -  
"ha.tj" = heart

Grapow: translates both by heart.

- The heart was thus believed to be the center of physical and emotional life, of the will and the intellect.

- "Happy" was described as long of heart, "depressed" short of heart, "attentive" counted of heart.

- The confident called "he who fills the heart", "to drown the heart" means to hide one's thoughts, "to wash the heart" was to "satisfy a desire". As to senile debility - it means that there is "effluency over his heart".

- "The dryness of the heart" (i.e. forgetfulness) is said to be the result of thrombosis in brain vessels.

## Depression

### Eber's Papyrus

"Now death is to me like health to the sick, like the smell of a lotus, like the wish of a man to see his house after years of captivity."

#### Ten leading causes of burden of diseases, world, 2004 and 2030

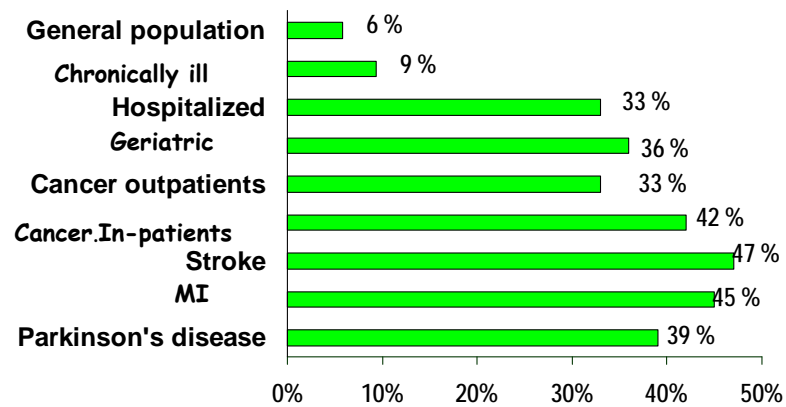
2004 Disease or injury	As % of total DALYs	Rank		Rank	As % of total DALYs	2030 Disease or injury
Lower respiratory infections	6.2	1		1	6.2	Unipolar depressive disorders
Diarrhoeal diseases	4.8	2		2	5.5	Ischaemic heart disease
Unipolar depressive disorders	4.3	3		3	4.9	Road trac accidents
Ischaemic heart disease	4.1	4		4	4.3	Cerebrovascular disease
HIV/AIDS	3.8	5		5	3.8	COPD
Cerebrovascular disease	3.1	6		6	3.2	Lower respiratory infections
Prematurity and low birth weight	2.9	7		7	2.9	Hearing loss, adult onset
Birth asphyxia and birth trauma	2.7	8		8	2.7	Refractive errors
Road trac accidents	2.7	9		9	2.5	HIV/AIDS
Neonatal infections and other	2.7	10		10	2.3	Diabetes mellitus
COPD	2.0	13		11	1.9	Neonatal infections and others
Refractive errors	1.8	14		12	1.9	Prematurity and low birth weight
Hearing loss, adult onset	1.8	15		15	1.9	Birth asphyxia and birth trauma
Diabetes mellitus	1.3	19		18	1.6	Diarrhoeal diseases

Global burden of disease WHO 2004

## "ICEBERG" Phenomenon



## Prevalence of Depressive Disorders in Different Patient Populations\*



Prevalence

\*There is a range of percentages depending on the study.

## Diagnosis of Depression

Even though depression is common, it is often goes undiagnosed and under treated in medical settings.

- The commonest presentation of depression is unexplained somatic symptoms and pain (30 - 100%)
- Fatigue and lack of concentration :  
At least 2 weeks of depressed mood or loss of interest in nearly all activities must be present.

## Tools to help Diagnosis

Two questions for provisional diagnosis:

- 1- In the past month, have you felt "down", depressed or hopeless?
- 2- In the past month, have you had little pleasure or interest in doing things?

The test can identify 96% of patients with depression.

However its specificity is only 57%, the clinician should obtain additional information to substantiate the diagnosis.

Whooley et al 2000

## Diagnosis of Depression

Plus additional symptoms\*

- Significant change in appetite or weight.
- Insomnia or hypersomnia.
- Fatigue or loss of energy.
- Psychomotor agitation or slowing.
- Feeling of worthlessness or inappropriate guilt.
- Diminished ability to think or concentrate.
- Recurrent thoughts of death or suicide.

## Heart and Emotions

- Cardiac disease has a reciprocal relation with emotional distress, psychosocial state, and psychiatric pathology.

## Panic and Anxiety

- A panic attack may present as chest discomfort, and cardiac ischemia can mimic acute anxiety.

## Psychosocial Factors and BP

- Given the effects of norepinephrine and epinephrine on the myocardium and on peripheral vascular resistance, it is not surprising that psychosocial factors correlate with transient and sustained blood pressure elevation.

## Urban and Rural Societies

- Human studies suggest that rural societies have fewer hypertensive individuals than do urban societies with their higher crime rate and unstable social structures.

## Stress, Cardiovascular Disease and Depression

Stress may produce:  
anxiety - depression - hostility -  
unexpressed anger - cynicism - mistrust

### Modern Stress

- Modern Stress, was experienced amongst 'workers by brain' rather than 'workers by hand'.
- Although manual workers experienced greater material deprivation than non-manual workers, the latter experienced more 'modern stress'.

Friedman M, et al 1959

## Acute stress → Activation of Sympathetic system →:

1. Reduction of vagal tone which is protective for the heart
2. Endothelial function is impaired → injured → thrombosis
3. Platelets more hyper-coagulable, more sticky, increases platelet aggregation and adhesion.
4. Haemoconcentration → increased blood viscosity

## Chronic Stress

1. Platelets
2. Endothelium
3. Vagal tone
4. Activating cortisol system
5. Ovarian dysfunction, oestrogen is probably very protective → it raises HDL

## M.I.

- After an episode of major depression, the risk of myocardial infarction increased to fivefold.
- Subsyndromal forms of depression had a twofold increased risk of myocardial infarction.

- 6 months after MI:  
Mortality rate : 17% in patients with Depression  
3% without .
- 12 months after bypass:  
Those with depression had a higher incidence of subsequent cardiac events, angina , heart failure , MI , repeat surgery.
- MD is a significant risk factor for the development of coronary artery disease and stroke.

Frasure-Smith et al 1993  
Connerney 2000  
Nemeroff 2001

### Key points:

Depression may contribute to cardiac disease through

- An overactive hypothalamic-pituitary-adrenocortical axis
- Platelet activation
- Decreased heart rate variability

### Increased Cortisol:

1. Mobilizes free fatty acids
  2. Endothelial inflammation
  3. Excessive clotting
  4. Hypertension
  5. Hypercholesterolemia
  6. Glucose dysregulation
- Increased circulating lipids and endothelial shearing stress can lead to vascular damage and plaque formation.

### Increased Catecholamine

also stimulates platelet growth factor and hence enhances platelet activity.

## Increased Platelet Activation

- Platelet activation leads to vascular damage and plaque formation
- Platelet aggregation leads to thrombosis , coronary vasoconstriction and progression of coronary artery disease.

## Altered Autonomic Function

- Decreased heart rate variability
- This is associated with increased risk of ventricular arrhythmia
- Also associated with blood pressure variability (which by itself is common among depressed patients and a risk factor for cardiovascular diseases)

## Social Support

- Evidence that high levels of social support are protective against CHD and COPD, while social isolation is related to increased mortality risk.
- It has been proposed that social supports may act to buffer the effect of various environmental stressors and hence increase susceptibility to disease.

Alloway 1987

## Temperaments (Genetic)

- |                |                  |
|----------------|------------------|
| 1. Depressive  | المزاج الإكتئابى |
| 2. Cyclothymic | المزاج النوابى   |
| 3. Irritable   | المزاج العصبى    |
| 4. Anxious     | المزاج القلق     |
| 5. Hyperthymic | المزاج النشط     |

Akiskal 2003

## Characters (Environmental)

مصداقية الذات

- Self-directedness: how well is a person, responsible, reliable, goal oriented and self confident.

التعاون

- Cooperativeness: how a person is considered a part of human society.

تجاوز الذات

- Self-transcendence: a part of the universe as a whole.

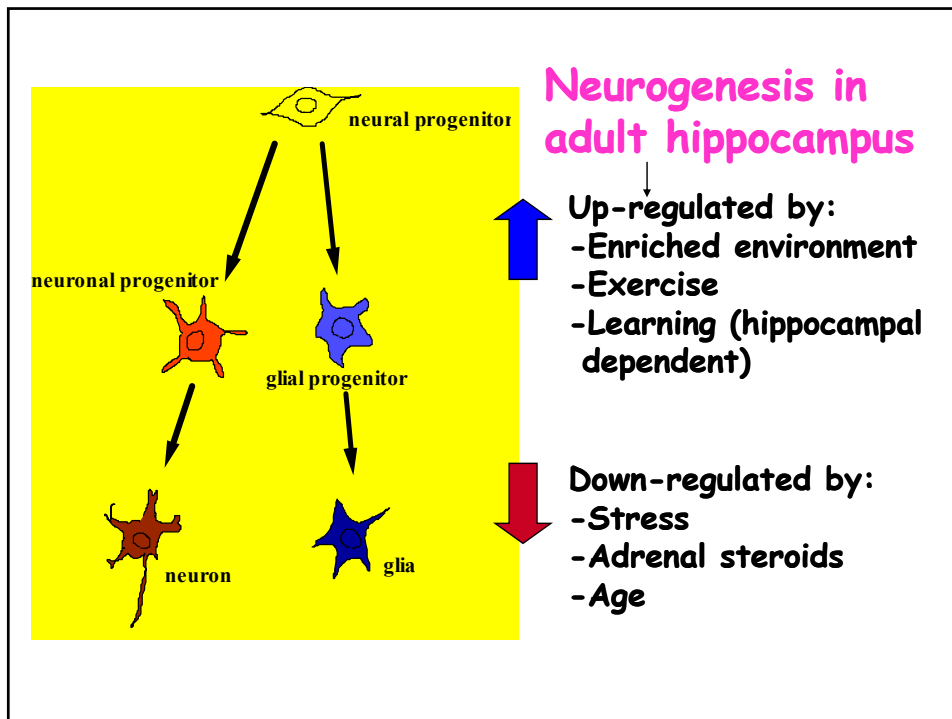
## Type "A" Behaviour "Time Urgency" or "Hurry Sickness"

التسابق مع الزمن

- a) Hates delays
- b) Hostility
- c) Self-destructive Tendencies
- d) Cognitive
- e) Affective
- f) Workaholic

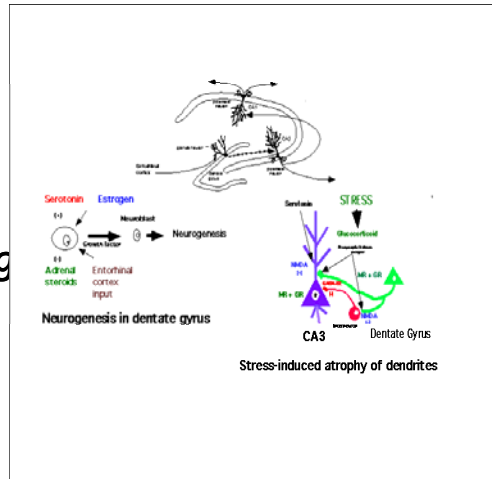
## Type "B"

- Relaxes readily.
- Focuses on the quality of their life.
- Easygoing "one day at a time".
- Less ambitious.
- Lower income/grades.
- Less irritable.



## REPEATED RESTRAINT STRESS

- Dendrites remodeled.
- Neurogenesis inhibited.
- Memory impaired.
- Fear increased - open field; fear conditioning
- Aggression increased
- HPA habituation



## PSYCHOSOCIAL INTERVENTION

- Effect of social interaction on rats and chimpanzees regarding dopaminergic pathways and hippocampal cells.
- Social interaction leads to neurogenesis and proliferation of dendrites in cells of the hippocampus and increased dopamine in the dopaminergic reward pathways.

Spitzer, 2002

Cont.

- Lack of social interaction leads to atrophy in cells of the hippocampus, decreased dopamine together with hopelessness and helplessness.
- SSRI provide significant lower re-hospitalization rates in patients recovering from acute coronary syndromes: evidence from a meta-analysis.

Spitzer, 2002

### Near death experiences

- Cardiac arrest is associated with a number of cognitive processes as well as long term psychological outcomes.
- Recent studies have indicated that approximately 10-20% of cardiac arrest survivors report cognitive processes, including the ability to recall specific details of their resuscitation from the period of cardiac arrest.

Parnia S, Spearpoint K, Fenwick PB 2010

## Cardiac Arrest Survivors

- There have also been numerous studies that have indicated that although the quality of life for cardiac arrest survivors is generally good, some are left with long term cognitive impairments as well as psychological sequelae such as post-traumatic stress disorder

Parnia S, Spearpoint K, Fenwick PB 2010

## Unemployment

- An increase in the prevalence rates of coronary heart disease or arterial hypertension causally linked in some studies with unemployment is scientifically questionable due to severe methodological shortcomings.

Weber A, Lehnert G 1997  
Goetzmann L 2004

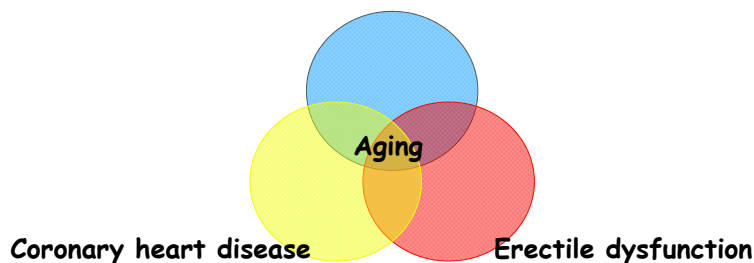
## Football matches

- The excitement of watching football matches appears to have similar cardiovascular consequences to the stress of a missile bombardment.

Meisel SR et al 1991 and Witte DR et al 2000

## Treatment of Depression Associated with CHD should not Contribute to more Erectile Dysfunction

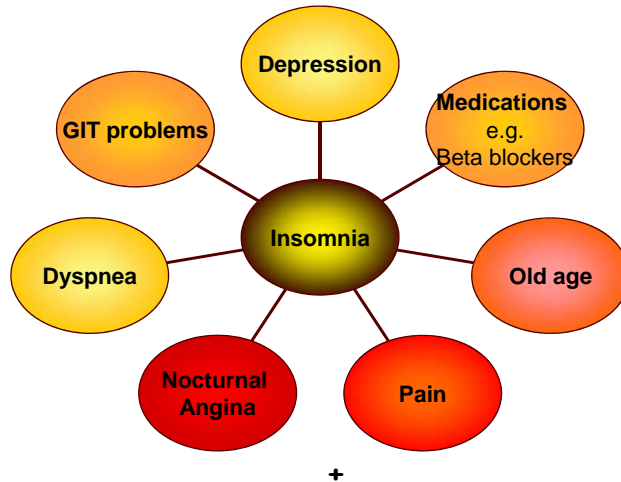
(DEC Syndrome in Older Men)



- SSRIs contribute to ED and as a result, paradoxically exacerbate existing depression

Tan RS, et al 2003

## Insomnia in Cardiac Patients may have Several Causes:



after cardio-surgical operation patients needs sedation

## Interaction with Cardiac Medications :

1. Anticoagulants
2. Beta blockers  
which are commonly used to:
  - Regulate the peripheral autonomic nervous system,
  - Reduce high blood pressure and arrhythmias.

SSRIs may increase blood levels of beta blockers, warfarin, and other cardiac medications via cytochrome P-450 isoenzyme inhibition.

(Least ciprolex) mirtazepine, Venlafaxine, Duloxetine.  
SSRIs also may reduce platelet aggregation. Patients who are receiving concomitant aspirin or warfarin may bruise or bleed easily and require dosage reductions or medication changes.

Antony Fernandez et al March 2004

## Interaction with Analgesics:

- Certain SSRIs inhibit methadone & oxycodone metabolism → opioid toxicity.
- Combining codeine or tramadol with certain SSRIs → loss of analgesia due to inhibition of CYP2D6.
- Combinations of certain SSRIs, phenothiazines & opioids induce serotonin syndrome.

- "Social Capital" is defined as the ties that bind families, neighborhoods, workplaces, communities, and religious groups together and find that it correlates strongly with subjective wellbeing.
- In fact the breadth and depth of individuals' social connections are the best predictors of their happiness.

## GET HAPPY ... IT IS GOOD FOR YOU

### It is infectious

- Embark on a loving relationship with another adult, and work Hard to sustain it.
- Plan frequent interactions with friends, family, and neighbours (in that order).
- Make sure you're not working so hard that you've no time left for "personal relationships, and leisure.

### GNP versus Happiness

- In your spare time join a club, volunteer for community service or take up religion.
- Happiness should become the goal of public policy and that the progress of national happiness should be measured and analysed as closely as the growth of gross national product.
- This means that public policy should be judged by how it increases human happiness and reduce human misery.

## MAKE YOUR CHOICE

- Be successful, competitive, workaholic and die younger.

or

- Less ambitious, lower income more relaxed and live longer.

## Conclusion

- Medicine is for the person not for the organ or a function.
- Your patient is a person and not a diabetic or hypertensive.
- Medicine is interpersonal communication followed by Medication. الطبية مواسة ثم مداواة
- You can practice psychotherapy 70% ventilation 20% exploration and 10% advice and suggestion.....just listen.
- Social Network is the best guarantee for a better quality of life.
- Hippocrates: Medicine contribution to : Recovery is rare, to healing is sometimes, to consolation is often!!!