Psychosocial Influences on Coronary Heart Disease (CHD)

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Learning objectives

To examine the role of psychosocial factors in the manifestation & management of CHD

• Type A (Coronary Prone) Behaviour Pattern
• Depression and anxiety
• Psychosocial work characteristics
• Social support
• The importance of psychosocial factors in CHD
Risk Factors and CHD

- “Unmodifiable” risk factors
  (age, sex, ethnicity, genetic)

- Lifestyle risk factors
  (smoking, diet, physical inactivity)

- Clinical risk factors
  (hypertension, lipids, diabetes)

- PSYCHOSOCIAL RISK FACTORS  - modifiable?
  (behaviour pattern/trait, depression/anxiety, work, social support)
Psychosocial Factors

Factors influencing psychological responses to the social environment and pathophysiological changes
1. Coronary Prone Behaviour Pattern

• Friedman & Rosenman (1959)
  • Competitive
  • Hostile
  • Impatient

• Type A Behaviour

Friedman, M. & Rosenman, R.H. (1959)
Association of specific overt behavior pattern with blood and cardiovascular findings
Assessing Type A Behaviour (1)

- Questionnaires
  - Jenkins Activity Survey (JAS) \textit{(Jenkins 1966)}
  - Bortner Short rating scale \textit{(Bortner, 1969)}
  - Minnesota Multiphasic Personality Index (MMPI)
    - 	extit{Cook-Medley Hostility Scale}
- Self report - poorer predictors
- Jenkins & Bortner don’t assess hostility
The Personality Type A/B questionnaire is a modified version of the Jenkins Activity Survey (Jenkins, Zyzanski, & Rosenman, 1971). It has been adapted for use with college students. For each of the 20 questions below, answer by clicking on the most appropriate statement.

1. When you are faced with an unfamiliar problem, what do you usually do?
   a) Address the problem immediately
   b) Think about what to do and then take action
   c) Sit back and let things work out for themselves

2. Compared with other students, how quickly do you usually complete your class assignments?
   a) I am usually finished before everyone else
   b) I finish faster than most of my classmates
   c) I finish right on time
   d) I frequently turn in assignments late

3. Has anyone ever told you that you talk too much?
   a) Yes, often
   b) A couple of times
   c) Once
   d) No, never

4. During normal conversation, how quickly do you speak?
   a) Faster than most people
   b) At an average pace
   c) Slower than most people

5. How often do you finish other people's sentences because they speak too slowly?
   a) Frequently
   b) Sometimes
   c) Almost never

http://www.psych.uncc.edu/pagoolka/TypeA-B-intro.html
Assessing Type A Behaviour (2)

• Structured clinical interview
• Assess behaviours
  – Speech
  – Answer content
  – psychomotor
  – Non-verbal
Western Collaborative Group Study

- 3,154 US males (39-59yrs old)
  Free from CHD & other health problems

- Data on potential risk factors
  - Serum cholesterol
  - Blood Pressure
  - Smoking
  - Type A/B Behaviour (Structured interview)

- 8.5 Year Follow Up (1960-69)
  257 CHD, 50 Deaths
  Type A:Type B = 2:1

Rosenman, Brand & Jenkins et al
Coronary Heart Disease in the Western Collaborative Group Study:
final follow up experiences of 8½ years. JAMA, 1975, 233, 872-7.
Framingham Heart Study

- 1674 men and women (1965...)
- Psychosocial Questionnaire (JAS)
- Follow up over 8 year period
- Women: Type A:B = 2:1 risk of CHD
- Men (age 45-64): Type A:B = 2:1 risk of CHD
  - White collar workers

Western Collaborative Group Study: 22 year follow-up

- Type A behaviour showed no association with mortality

Ragland & Brand, Coronary Heart Disease Mortality in the Western Collaborative Group Study: follow up experience of 22 years, American Journal of Epidemiology, 1988, 127, 462-75.

- For the 257 with CHD at 8.5 years – lower mortality in type A

Recurrent Coronary Prevention project

• Randomised Control Trial

• 862 participants; 4.5 years

1. Cardiology Counselling (education only)
2. Type A Behaviour Modification (Education & Psychological)

Recurrent Coronary Prevention project: Group 2

• **Cognitive** -

  ‘I must always arrive first at work’

  may be reconstructed as

  ‘As long as I arrive by 9am. I can complete a good days work’

• **Behavioural**

  relaxation, walk at a more relaxed steady pace, reduce work demands

• **Emotional**

  Learning to relax in response to early signs of anxiety or anger

Findings from the Recurrent Coronary Prevention project

• Group 2 - significantly fewer fatal & non-fatal cardiac events
  12.9% vs
  • 21.2% in group 1 and
  • 28.2% in group 3

• Group 2 – Reduced type A behaviour 35.1% (vs 9.8% of group 1)

• Conclusion – reduction in type A behaviour reduces morbidity and mortality in post infarction patients.

Type A Behaviour & Hostility

More recent research identifies the ‘Hostility’ dimension of Type A Behaviour as a key risk factor

- Feelings of anger
- Annoyance and resentment
- Verbal or physical aggression


The overall evidence is equivocal
2. Depression/Anxiety and CHD

- Both are well defined mental health problems
- Established measurement instruments
  - MMPI
  - Beck Depression Inventory (BDI)
  - General Health Questionnaire (GHQ)
  - Spielberger's State Anxiety Inventory
- Greater potential for intervention

For examples of Psychological Tests:
Depression: Development of CHD

• 2,832 participants (no CHD)
  • Followed up over 12 years
  • Those developing CHD in first 2 years excluded
  • Controlled for known risk factors

• Higher depression ratings at baseline = higher CHD and associated mortality

Depression/Anxiety and CHD

• Issues for research
  – CHD ↑ Depression/anxiety
  – Depression/anxiety could share common antecedents (e.g. social deprivation)

• More research and stronger evidence for depression
  – Numerous review articles
  – Measures used to diagnose and measure depression in clinical trials
Depression in CHD patients: Prognosis

Frasure-Smith & Lesparance (2005) follow-up studies at 6 and 18 months assessing depression and MI in MI patients.

- 222 patients hospitalised for MI assessed for major depression 5-10 days after discharge
- At 6 month follow up, major depression a significant predictor of mortality
- 3.4 times more likely to die

Specific negative emotions have been related to adverse cardiac events, but a general propensity to psychological distress may also affect cardiovascular outcomes. In this summary article, we provide a reliable estimate of the prognostic risk associated with Type D (distressed) personality, a general propensity to distress that is defined by high scores on the “negative affectivity” and “social inhibition” traits. Quantitative analyses of prospective studies that included a total of 6121 patients with a cardiovascular condition indicated that Type D personality was associated with a more than 3-fold increased risk of adverse events (9 studies) and long-term psychological distress (11 studies). In addition, a narrative review of 29 studies showed that Type D personality and depression are distinct manifestations of psychological distress, with different and independent cardiovascular effects. There are also plausible biological and behavioral pathways that may explain this adverse effect of Type D personality. The findings reported in this summary article support the simultaneous use of specific and general measures of distress in cardiovascular research and practice.

with the combination of distress and social isolation predicting poor cardiac prognosis. Accounting for this general propensity to psychological distress offers the opportunity to flag high-risk patients that may benefit from a more personalized approach to cardiac care. The “distressed” or Type D personality refers to a chronic, more covert form of distress that is distinct from depression. Type D patients are inclined to experience negative emotions (negative affectivity) and to inhibit self-expression in social interaction (social inhibition). Several studies from our research group have examined the notion that Type D personality is a general propensity to psychological distress that affects cardiovascular outcomes. The determinants of psychological distress as a cardiac risk marker are still unclear; hence, a number of these studies also focused on the role of Type D as predictor of distress.

In identifying chronically distressed patients, we can develop new interventions to minimize the adverse consequences of negative emotions on cardiovascular outcomes. To have added value, this general propensity to distress
The Type D Scale-16 (DS16).

<table>
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<tr>
<th>Statement</th>
<th>Code</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
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</thead>
<tbody>
<tr>
<td>I am happy most of the time</td>
<td></td>
<td>0</td>
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<tr>
<td>I take a gloomy view of things</td>
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<tr>
<td>I often talk to strangers</td>
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<tr>
<td>I have little impact on other people</td>
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<tr>
<td>I find it hard to express my opinions to others</td>
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<td>The future seems hopeful to me</td>
<td></td>
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<tr>
<td>I often find myself taking charge in group situations</td>
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<td>I find it hard to make “small talk”</td>
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<tr>
<td>I am often in a bad mood</td>
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<tr>
<td>I often feel unhappy</td>
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<tr>
<td>I make contact easily when I meet people</td>
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<tr>
<td>I often find myself worrying about something</td>
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<tr>
<td>I like to be in charge of things</td>
<td></td>
<td>0</td>
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<tr>
<td>When socializing, I don’t find the right things to talk about</td>
<td></td>
<td>0</td>
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<tr>
<td>I feel at ease most of the time</td>
<td></td>
<td>0</td>
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<tr>
<td>I am often down in the dumps</td>
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3. Psychosocial work characteristics

  - Large Labour force data sets (USA)

- Significant associations between psychosocial job characteristics and myocardial infarction

- High demand/low control = MI

- Substantial amount of research supports the role of psychological **demands**, **control** & **social support** in relation to **stress** and adverse coronary health outcomes

- Evidence - CHD onset and prognosis

The Whitehall Studies

Whitehall I
- Male British Civil Servants (n = 17,530)
- 10yr period
- Men in lowest grade had higher CHD mortality rate than men in highest grade
- 3x mortality rate from all causes

Marmot, Shipley & Rose, Lancet, 1984

Whitehall II
- 10,314 (6900 men; 3414 women)
- Employment grade was strongly associated with work control and demands

Whitehall Study References


Job stress linked to heart attacks

14 September 2012 Last updated at 11:04

Having a highly demanding job, but little control over it, could be a deadly combination, UK researchers say.

The team based at University College London analysed 13 existing European studies covering nearly 200,000 people.

They found "job strain" was linked to a 23% increased risk of heart attacks and deaths from coronary heart disease.

Co-author of the report, Prof Andrew Steptoe, professor of Epidemiology and Public Health explained the findings.

http://www.bbc.co.uk/news/health-19598118
Working hours & CHD

• Those working 11-hours or more a day were 67% more likely to have a heart attack (than those working standard 7-8 hours a day)

• Data from the Whitehall II study
  – Men and women (working F/T) free of heart disease (n=7,095).
  – 11 year follow up of cohort

“We have shown that working long days is associated with a remarkable increase in risk of heart disease. Considering that including a measurement of working hours in a GP interview is so simple and useful, our research presents a strong case that it should become standard practice. This new information should help improve decisions regarding medication for heart disease. It could also be a wake-up call for people who overwork themselves, especially if they already have other risk factors.” (Professor Kivimäki)

4. Social Support

Both quantity & quality of social relationships have been found to be related to morbidity and mortality

- Helps coping with life events
- Motivation to engage in healthy behaviours

Orth-Gomer et al, (1993) Psychosomatic Medicine,

- Men (n = 736) 6 year follow up emotional support - close persons ("attachment") extended network ("social integration").
- Both ‘attachment’ and ‘social integration’ were lower in men who contracted CHD
- Incidence of MI and death from CHD

What can doctors do?

- Observe/explore behaviour patterns
- Identify signs of depression/anxiety
- Ask questions from assessment tools
- Ask patients about their job/occupation
- Ask patients about available support (Physical; Emotional)
- Liaise with relevant services (Social Care; Occupational Health)
Prospective cohort studies suggesting an etiological role

(strong or moderate association)

• Type A/hostility (15/22 studies)
• Depression (15/22 studies); Anxiety (4/8 studies)
• Psychosocial work characteristics (10/13 studies)
• Social support (6/9 studies)

Kuper, Marmot, Hemingway (2005)
Prospective cohort studies suggesting a prognostic role

(strong or moderate association)

• Type A/hostility (2/15 studies)
• Depression (18/34 studies); Anxiety (8/18 studies)
• Psychosocial work characteristics (2/4 studies)
• Social support (14/21 studies)

Kuper, Marmot, Hemingway (2005)
We concluded that, based on prospective epidemiological data, there was evidence for an association between depression, social support and psychosocial work characteristics and CHD aetiology and prognosis. Evidence for an effect of anxiety or type A behavior was less consistent.

Positive studies were more likely to be cited.

To conclude...

- Psychosocial factors play an etiological and prognostic role in relation to CHD

- They are likely to cluster with other risk factors in contributing to CHD onset and prognosis

- An awareness of psychosocial factors can help to identify patients that may be at high risk

- There is scope to modify psychosocial risk factors