

STRESS AND STRESS MANAGEMENT IN DENTAL PRACTICE

Adrienne Stauder M.D.,Ph.D.

Institute of Behavioural
Sciences



Dental Psychology lecture

Institute of Behavioural Sciences

Learning objectives

- Understand how stress can effect your health
- Symptoms related to chronic stress
- Dental anxiety and it's management
- Strategies to cope with stress
- Understand the stages of change model

"Stress is the state manifested by a specific syndrome which consists of all the nonspecifically induced changes within a biologic system."

(Selye 1956)



single, nonspecific reaction of the body to a demand ...

eustress distress
 ⇔

Hans Selye (1907-1982)
Stress without distress
1976, 24-25. pages

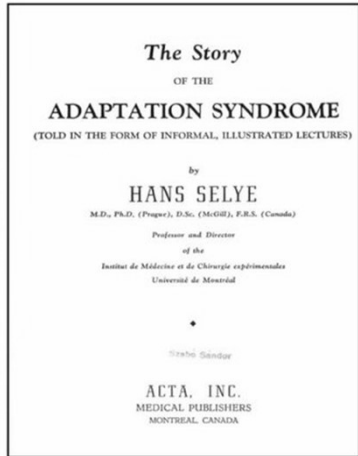
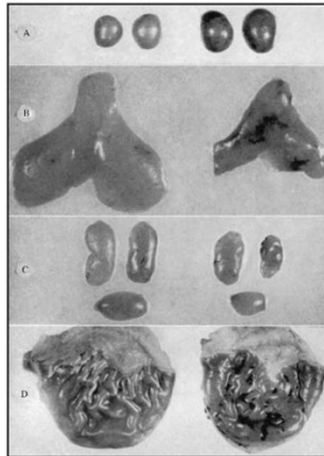
Stressor:
the stimulus causing, triggering the stress reaction



Stress:
the physiological state of the body triggered

- (A) adrenals,
- (B) thymus,
- (C) iliac lymph nodes,
- (D) gastric mucosa

left: normal rat
right: stress of being immobilized on a metal board for 24 h.



enlargement of the adrenals (which also showed lipid discharge and hyperemia, and consequently became reddish-brown), the intense atrophy of the thymus and lymph nodes and the numerous blood-covered gastric erosions in the stressed rat (right; modified from Selye 1952).

Canon: Alarm reaction
Fight or flight or freeze



Stress hormones: epinephrin, vasopressin

Muscle tension increasing
Heart rate increasing
Respiratory rate increasing
Blood pressure elevating

Gastrointestinal decreased

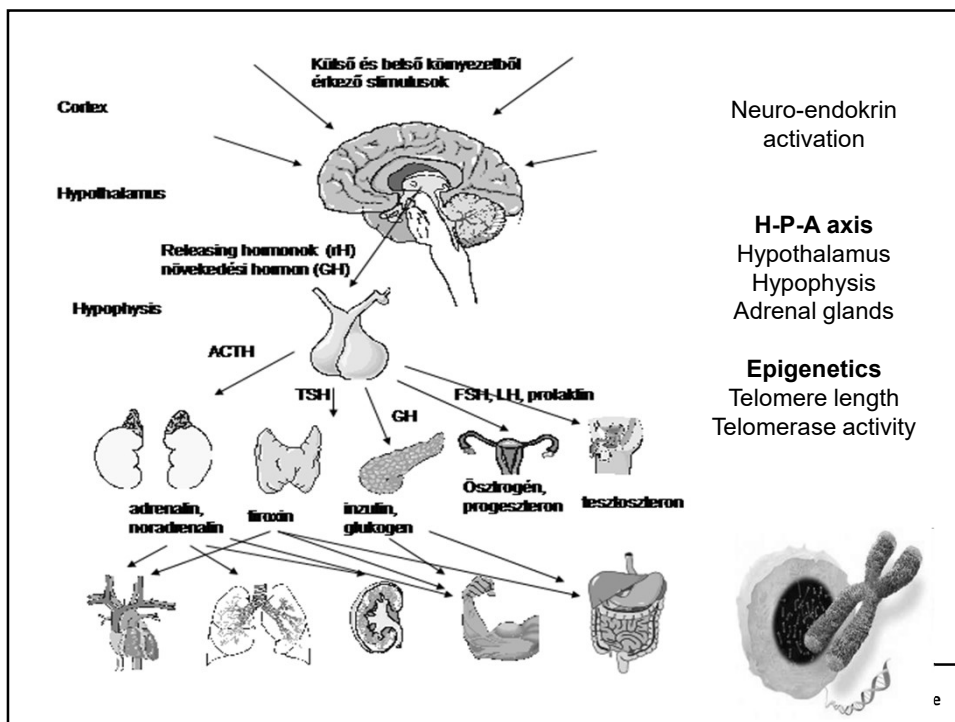
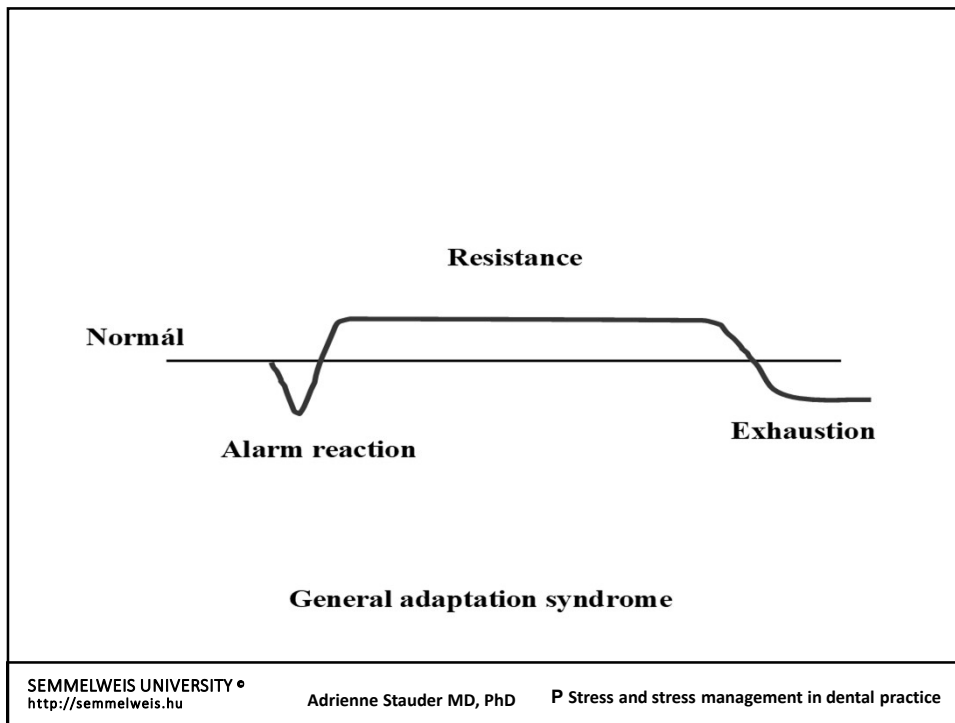
Alertness increased
Attention focused

Stress hormones: cortisol, oxytocin

Blood glucose increasing
Fatty acids increasing

Gastrointestinal functions decreased
Immune functions: decreased
Reproductive system: decreased

Support seeking: increased



Epigenetics

- (Reversible) changes in gene activity which are not caused by changes in the DNA sequence.
- It is the study of the regulation of gene expression, the manifestation of certain phenotypes from the genotype
- Regulation of activity of certain genes influenced by environmental factors, mainly not hereditary.
- Reversible changes in the chromatin: histone acetylation and methylation

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2009 Nobel Prize in Medicine



The Nobel Prize in Physiology or
Medicine 2009

"for the discovery of how chromosomes are protected by telomeres and the enzyme telomerase"



Photo: Gerbit, Licensed by Attribution Share Alike 3.0

Elizabeth H. Blackburn

© 1/3 of the prize

USA

University of California
San Francisco, CA, USA

b. 1948
(in Hobart, Tasmania,
Australia)



Photo: Gerbit, Licensed by Attribution Share Alike 3.0

Carol W. Greider

© 1/3 of the prize

USA

Johns Hopkins University
School of Medicine
Baltimore, MD, USA

b. 1961



Photo © Harvard Medical School

Jack W. Szostak

© 1/3 of the prize

USA

Harvard Medical School;
Massachusetts General
Hospital
Boston, MA, USA; Howard
Hughes Medical Institute

b. 1952
(in London, United
Kingdom)



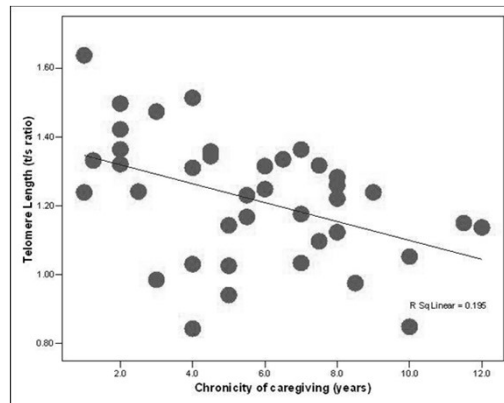
Telomeres:

- 'cap-like' regions at the ends of chromosomes, play a vitally important part in preserving the integrity and stability of chromosomes during DNA replication.
- **Telomerase enzyme:**
- the 'anti-aging' or 'immortality enzyme', makes possible the
- recursive division of cells without damage.
- ensures, at least in certain cells, that chromosomal DNA is not shortened during replication.
- this enzyme also plays a part in the development of the ability of cancer cells to divide endlessly.

Telomere shortening and chronic stress

Elisabeth Blackburn Ted Talk:

<https://www.youtube.com/watch?v=2wseM6wWd74&t=855s>



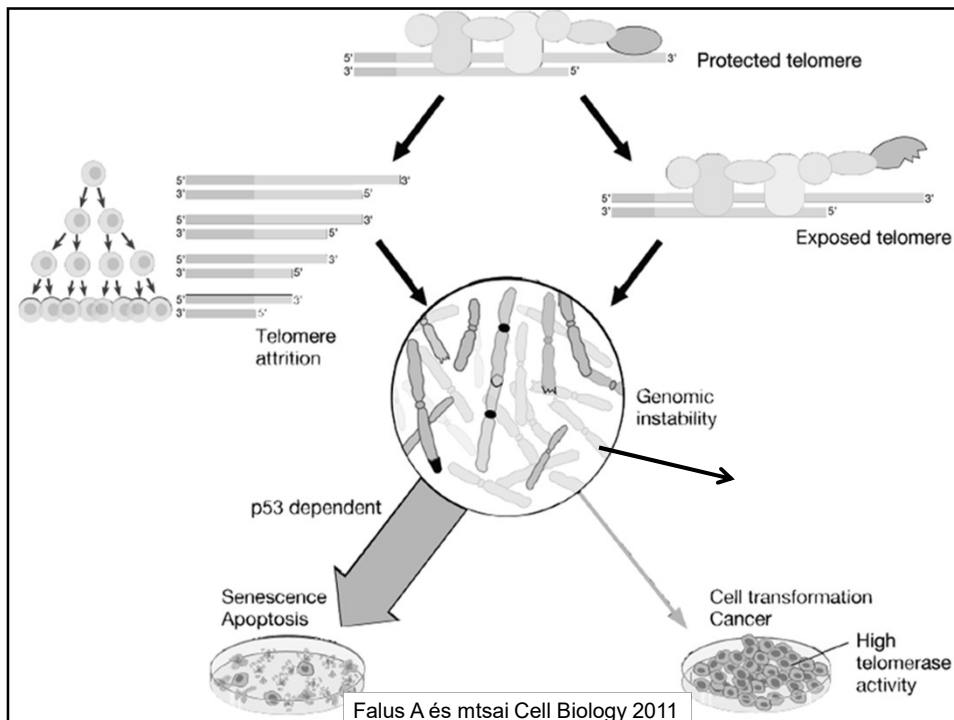
¹Epel és mtsai (2004). PNAS 101 , 17312-17315

²Damjanovic és mtsai (2007) J Immunology 2007, 179, 4249-4254

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Intense, chronic stress effects children's brain development

abuse, neglect, or a violent environment can cause

- in childhood developmental delays, learning problems, behavioral problems, psychosomatic symptoms
- in youth increased risk of interpersonal problems, mental disorders (depression, drug abuse, alcoholism, PTSD)
- in adulthood diabetes, heart disease, other health problems

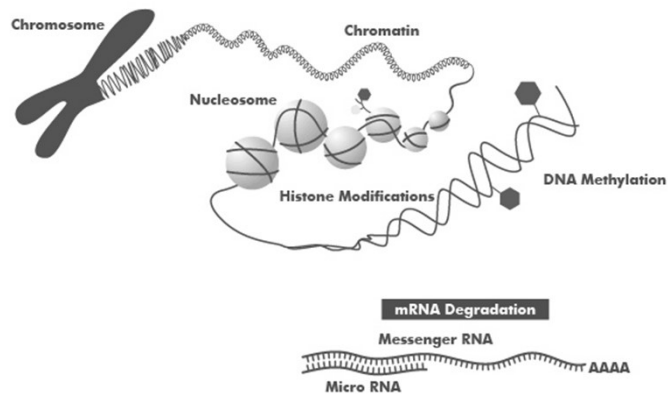


Toxic Stress Derails Healthy Development –<https://www.youtube.com/watch?v=rVwFkcOZHJw&t=8s>
 Cynthia Hall - Toxic Stress and the Brain - <https://www.youtube.com/watch?v=KDhPBkzkxz8>

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<https://www.novusbio.com/research-areas/epigenetics>

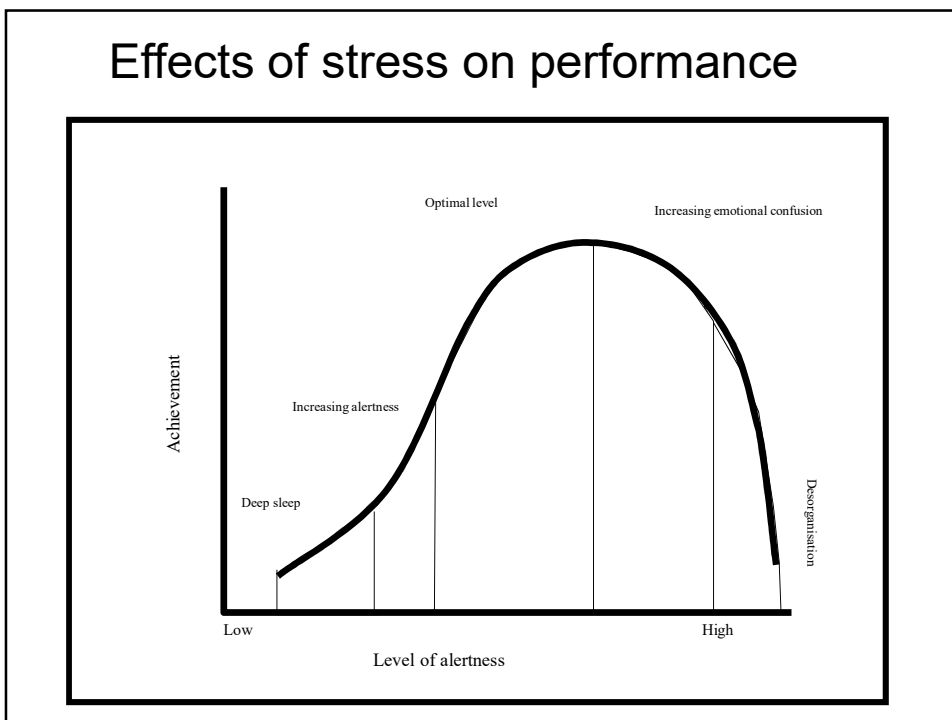
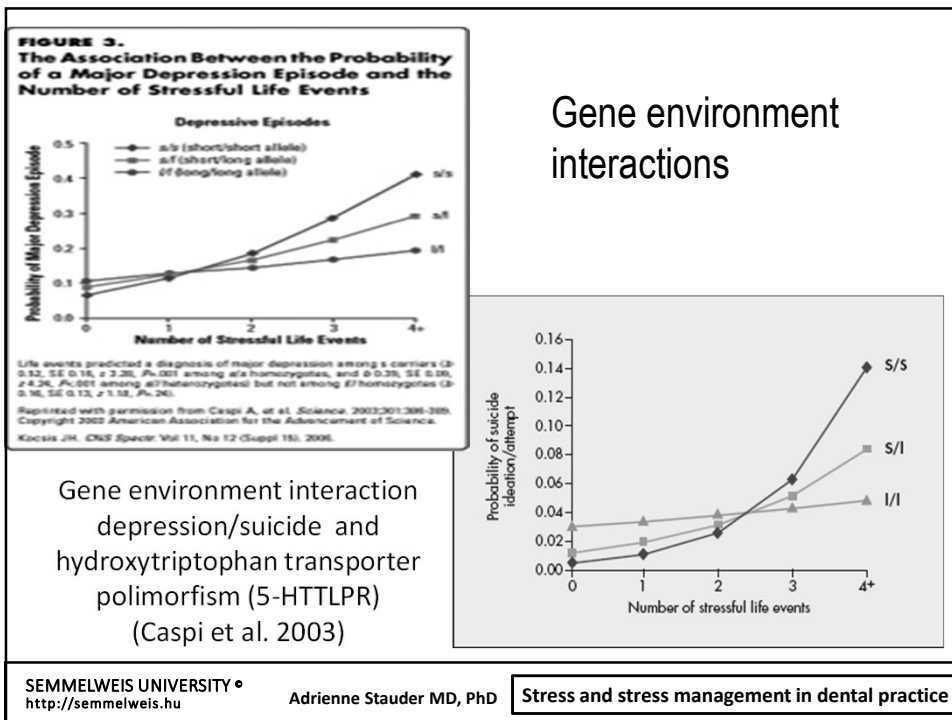
Chromatin Modifiers: Major mechanisms inducing chromatin changes include -

DNA modifiers: add methyl groups directly to DNA sequences

Histone modifiers: add or remove acetyl and methyl groups to histones within nucleosomes

MicroRNAs (~22 nucleotides-long sequences): regulate gene expression at the post-transcriptional level by sequence specific binding to mRNA, which leads to targeted mRNA degradation and inhibits gene expression

Chromatin remodelers: change the composition and positioning of nucleosome





„Positive stress”

- Increased attention and alertness, vitality
- Thinking is faster
- Creativity
- Successful problem solving
- Evolutionary purposes, adaptation („stress immunity”, coping mechanisms) !



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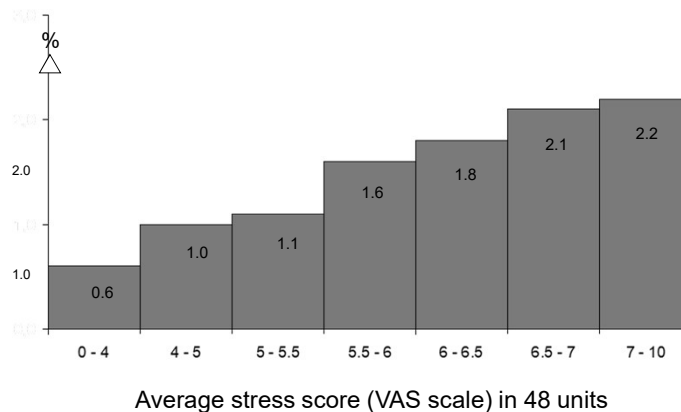
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Stress levels among nurses and critical incidents

A study of 293 nurses during 3 months

Critical incidents
(falls, medication errors, other errors)



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F Dugan et al. J Nurs Care Qual 1996;10:46-58

Somatic,
 psychological
 and behavioral
 symptoms of
 chronic stress

Salt of Life or Kiss of death?



Somatic, psychological and behavioral symptoms of chronic stress

Somatic symptoms	Psychological symptoms	Behavioral symptoms
Headache	Anxiety	Loss of appetite
Chest pain	Tension	Bursts of anger
Palpitations	Irritability	Substance dependency
High blood pressure	Depression	Alcohol abuse
Dyspnea	Sadness	Smoking
Muscle pain	Anger	Social withdrawal
Back pain	Mood shifts	Crying spells
Bruxism	Dissatisfaction	Conflict seeking
Diarrhae	Unsteadiness	Decreased performance
Obstipation	Confusion	Loss of responsibility
Stomachache	Burnout	
Perspiration	Memory problems	
Tiredness	Feeling offended	
Sleep problems	Feelings of guilt	
Weight problems	Difficulty concentrating	
Sexual problems	Negative attitudes	
Skin rushes		

Burnout

Herbert Freudenberger 1974:

Burnout: The High Cost of High Achievement.

Reaction to prolonged or chronic job stress
characterized by three main dimensions:

- Emotional exhaustion,
- Depersonalisation / cynicism (alienation from work and patients),
- Reduced professional performance.

→ → → physical symptoms and mental health problems

Oral symptoms of stress

- Routine dental examinations and cleanings, dentists are able to detect:
- orofacial pain,
- bruxism,
- temporomandibular disorders (TMD),
- mouth sores
- gum disease.

Bruxism

- Grinding teeth and clenching jaws
- Associated with sleep disorders
- abnormal bite or missing teeth
- Stress, anxiety, nervous tension, anger

Signs of bruxism include:

- Tips of the teeth appear flat
- Tooth enamel is rubbed off, causing extreme sensitivity
- Tongue indentations

Stressors



Traumas, disasters - PTSD Posttraumatic stress disorder

What PTSD Looks Like:

SEMMELOW:
<http://semnr>

@RealDepressionProject dental practice

Important life events

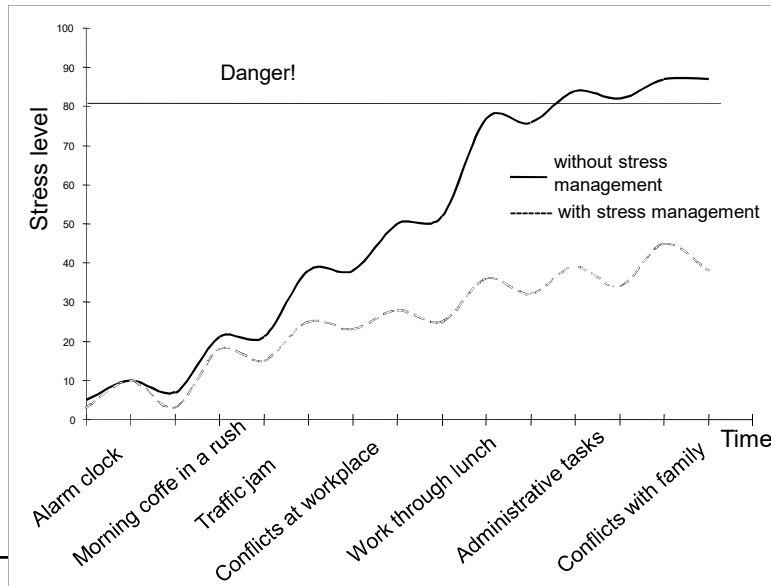
Holmes and Rahe Life Event Scale

- Death of a spouse 100
- Divorce 73
- Marital separation 65
- Imprisonment 63
- Death of a close family member 63
- Personal injury or illness 53
- Marriage 50
- Dismissal from work 47
- Marital reconciliation 45
- Retirement 45
- ...
- ...
- Change in eating habits 15
- Vacation 13
- Christmas 12
- Minor violation of law 11
- Score of 300+: At risk of illness

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Chronic daily stressors



Stress of GB dental practitioners

- Work-related factors accounted for half of the perceived stress:
- fragility of dentist-patient relationship,
- time and scheduling pressures
- staff and technical problems
- job dissatisfaction
- number of hours worked per week
- 60% tense or depressed, headache, sleep
- alcohol use was associated w work stress

High dental anxiety

Prevalence: 1/ 6-7

Etiology:

- Perception of the dental environment
- Previous negative experience
- Comorbid psychological / mental health condition:
fear of social evaluation, fear of germs, fear of being away from the safety of home, hopelessness

Vicious circle (40%): avoidance of dental visits -worsening of problems - more intensive and potentially traumatic treatment –reinforcement of the fear–more avoidance

JM Armfield, LJ Heaton Management of fear and anxiety in the dental

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clinic: a review. Australian Dental Journal 2013; 58: 390–407
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PREVIOUS NEGATIVE
DENTAL EXPERIENCE



LACK OF CONTROL DURING
DENTAL TREATMENT

CAUSES OF DENTAL ANXIETY



EXPERIENCING EXTREME
PAIN AFTER TREATMENT



LACK OF UNDERSTANDING
FROM THE DENTIST

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Management of high dental anxiety

- Identification and assessment
- Trusting relationship
- Realistic information, familiarisation (Tell-show-do)
- Providing the sense of control and predictability (rest breaks, signaling)
- Distraction
(video, music)



JM Armfield, LJ Heaton Management of fear and anxiety in the dental clinic: a review. Australian Dental Journal 2013, 58: 390-407
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Management of high dental anxiety

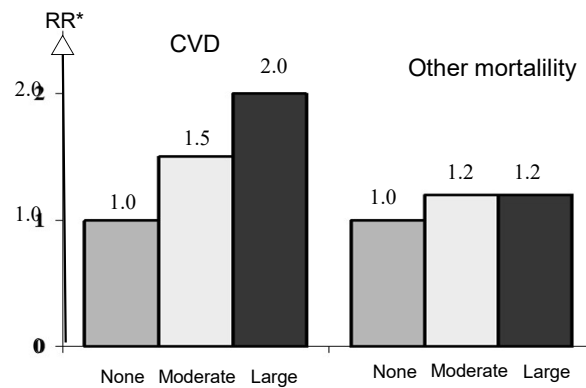
- Cognitive-behavioural intervention (desensitization, cognitive restructuring)
- Relaxation
- Pharmacological support (nitrous oxide, oral sedation)
- Hypnosis in dentistry: watch videos on Youtube!

eg. https://www.youtube.com/watch?v=it_UfJ2by4k

JM Armfield, LJ Heaton Management of fear and anxiety in the dental clinic: a review. Australian Dental Journal 2013, 58: 390-407
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Down sizing and mortality

7.5 year follow-up, 22.430 state employees, not-downsized.



* Controlled for age, gender, SES

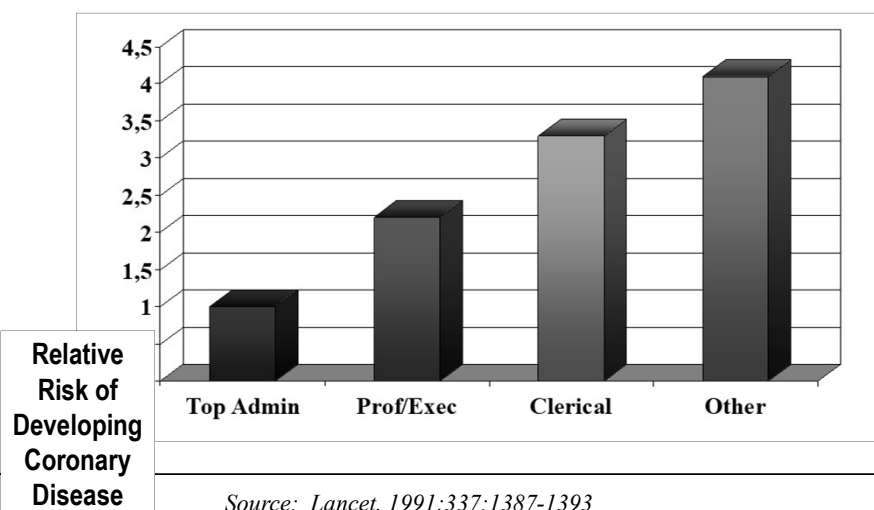
Downsizing

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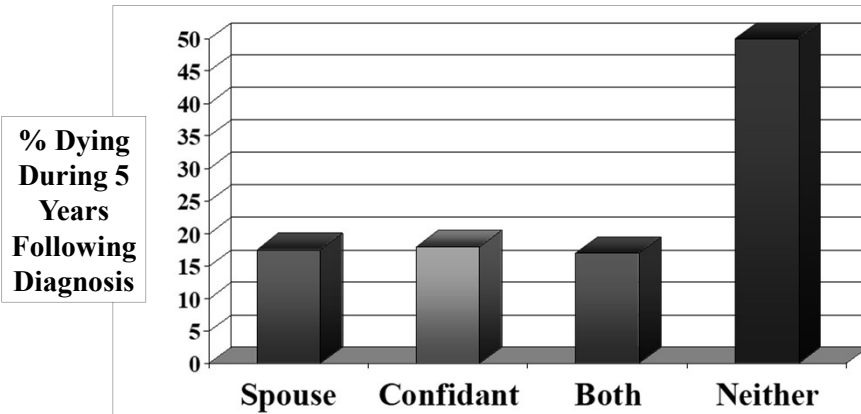
Public Health Management Practice

Low Status Raises Coronary Disease Risk in British Civil Servants



Source: *Lancet*, 1991;337:1387-1393

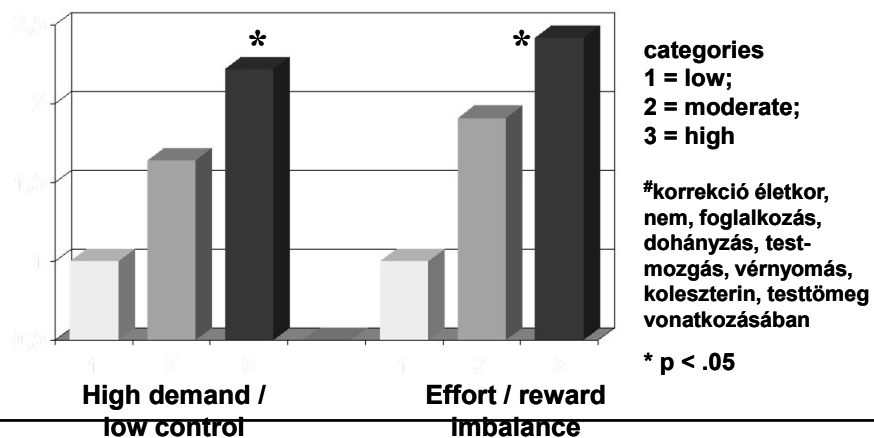
Social Isolation Links to Higher Mortality in Coronary Heart Disease Patients



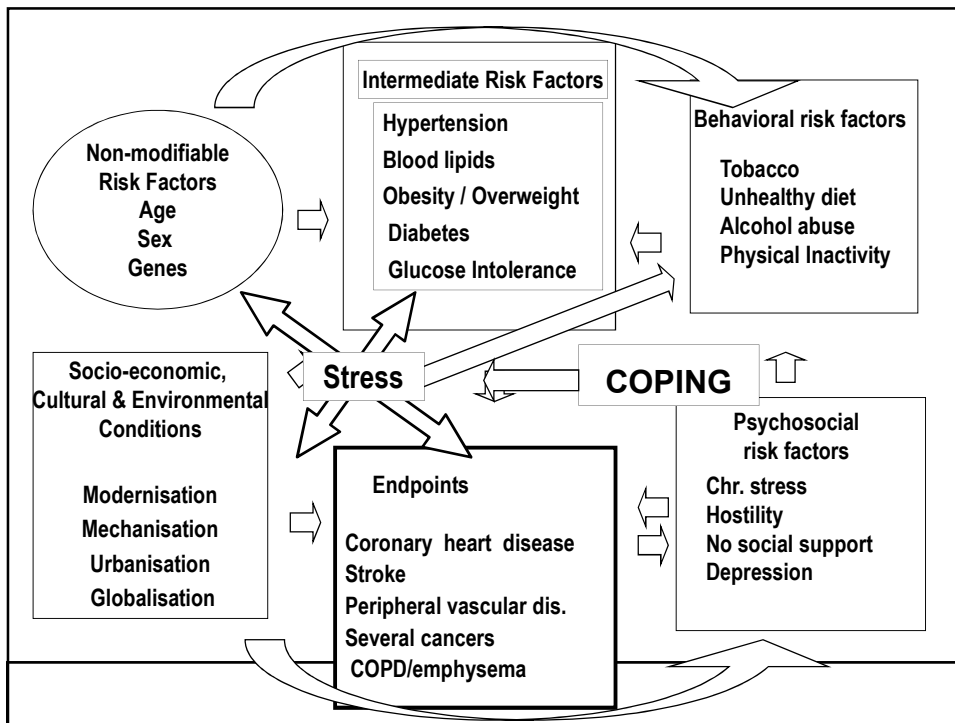
Source: *JAMA*, 1992;267:520-524

Work stress and cardiovascular mortality (corrected* odds ratio)

N=812 (73 deaths); mean follow-up 25,6 years

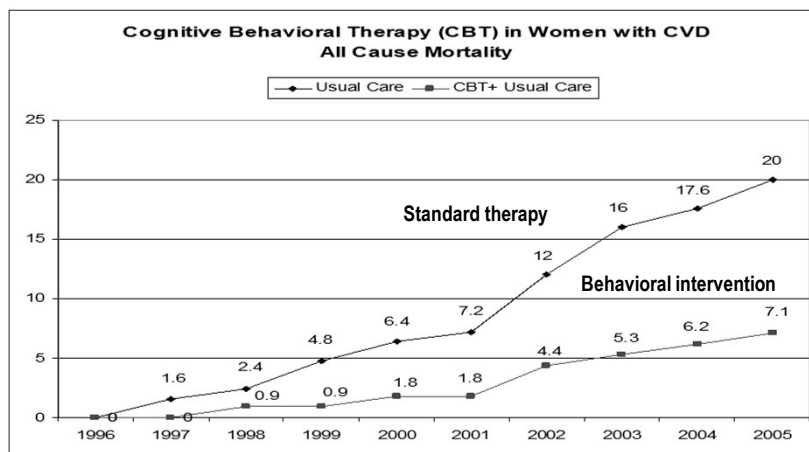


Forrás: M. Kivimäki et al. (2002), *BMJ*, 325: 857



STOCKHOLM WOMEN'S INTERVENTION TRIAL FOR CORONARY HEART DISEASE (SWITCHD) –severe heart disease, N=235

After 7 years, 67% lower mortality (OR=0.33, p=0.007)



Kristina Orth-Gomér et al. Circulation 2009, 1:25-32



European Guidelines on cardiovascular disease prevention in clinical practice (version 2012)

The Fifth Joint Task Force of the European Society of Cardiology and Other Societies on Cardiovascular Disease Prevention in Clinical Practice (constituted by representatives of nine societies and by invited experts)

Developed with the special contribution of the European Association for Cardiovascular Prevention & Rehabilitation (EACPR)[†]

Clinical practice/education



Psychosocial aspects in cardiac rehabilitation: From theory to practice. A position paper from the Cardiac Rehabilitation Section of the European Association of Cardiovascular Prevention and Rehabilitation of the European Society of Cardiology

Nana Pogossova¹, Hugo Saner², Susanne S Pedersen^{3,4}, Margaret E Cupples⁵, Hannah McGe⁶, Stefan Höfer⁷, Frank Doyle⁸, Jean-Paul Schmid⁹ and Roland von Känel^{9,10}, on behalf of the Cardiac Rehabilitation Section of the European Association of Cardiovascular Prevention and Rehabilitation of the European Society of Cardiology*

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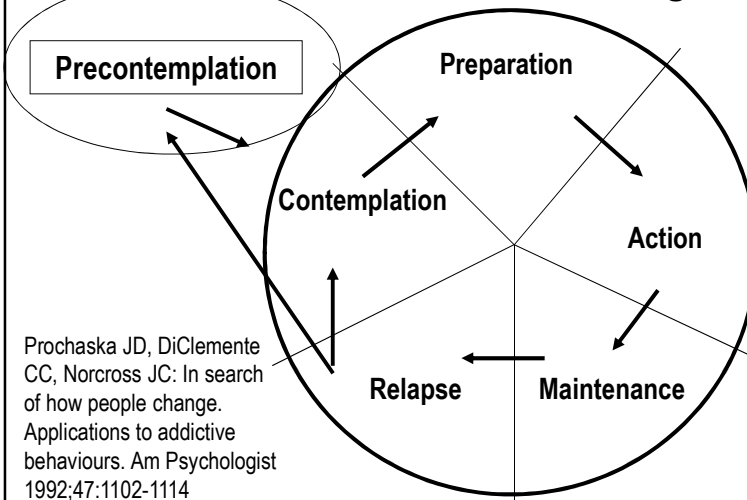
- 4.3 Nutrition 1664
- 4.3.1 Introduction 1665
- 4.3.2 Nutrients 1665
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- 4.3.4 Functional foods 1667
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- 4.5 Management of psychosocial factors 1671
- 4.5.1 Introduction 1671
- 4.5.2 Specific interventions to reduce depression, anxiety, and stress 1671
- 4.6 Body weight 1672
- 4.6.1 Introduction 1672

Recommendations on the management of psychosocial factors

Recommendations	Class*	Level [†]	GRADE	Ref [‡]
Multimodal behavioural interventions, integrating health education, physical exercise, and psychological therapy for psychosocial risk factors and coping with illness, should be prescribed.	I	A	Strong	195, 197–200
In the case of clinically significant symptoms of depression, anxiety, and hostility, psychotherapy, medication, or collaborative care should be considered. This approach can reduce mood symptoms and enhance health-related quality of life, although evidence for a definite beneficial effect on cardiac endpoints is inconclusive.	IIa	A	Strong	85, 86, 199, 200, 343–347

*Class of recommendation.
[†]Level of evidence.
[‡]References.

Change is a process! Transtheoretical model of the stages of change



Prochaska JD, DiClemente CC, Norcross JC: In search of how people change. Applications to addictive behaviours. Am Psychologist 1992;47:1102-1114

Physical activity as stress reduction

Gardening
Walk, excursion
Bicycle, dance
Yoga, thai-chi, chikung
Jogging, swimming
Aerobic, body-building
Any sport....



Regular, not-exhausting (min. 30 minutes/day)

Motivation



Copyright 2003 by Randy Glasbergen, www.glasbergen.com
"What fits your busy schedule better, exercising one hour a day or being dead 24 hours a day?"

Coping

Conscious behavior

Its goal is to maintain or restore the physical and psychological equilibrium (homeostase) of the organism



- Problem focused
- Emotion focused
- Support seeking

Lazarus, Folkman 1984

God, give us grace to accept with serenity
the things that cannot be changed,
Courage to change the things
which should be changed,
and the Wisdom to distinguish
the one from the other.

Williams Life Skills® (WLS) program stress management and psychosocial skills

- Behavioral intervention, manualized, standardized
- Developed by Virginia and Redford Williams (Duke Egyetem, Durham, NC, USA)
- Based on international experiences
- Complex, structured, handouts, workbooks
- Self-help DVD + Workbook
- Scientific evidences of effectiveness for various target groups
- Hungarian translation, cultural adaptation
- Since 2004 > 4000 participants, >200 health care professional

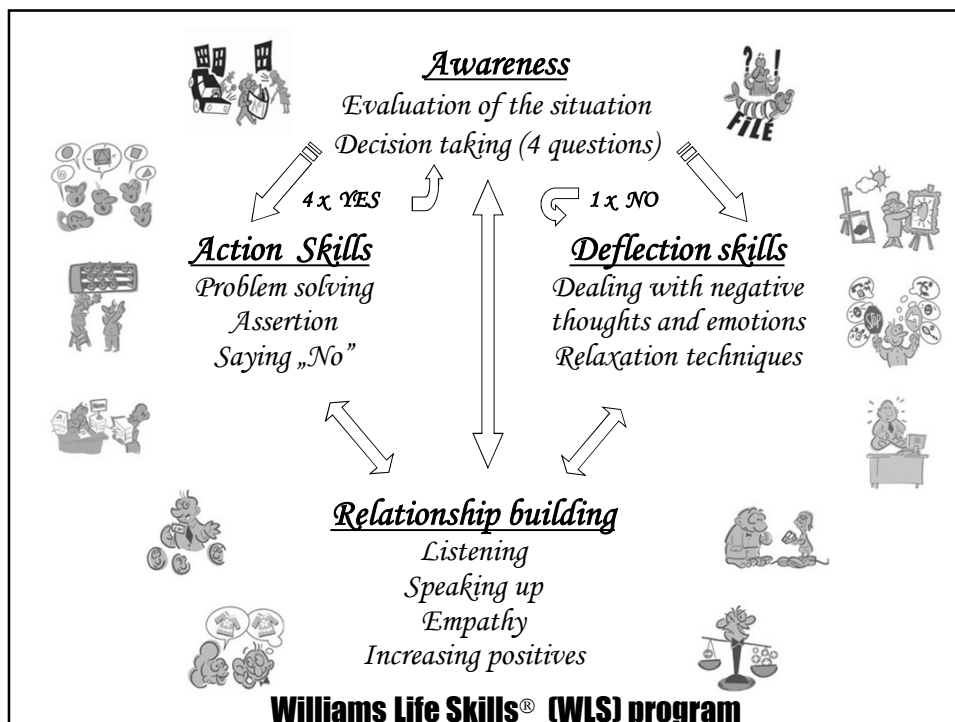


www.williamslifeskills.com, www.eletkeszsegek.hu

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WLS methods



- Simple cognitive behavioral therapy technics
- 16-20 hours small group skills training
- During the thematic discussions the participants own stress related problems are discussed.
- Psychoeducation (handouts!)
- Cognitive techniques (thought diary, reframing)
- Behavior therapy (role plays)
- Relaxation (3 short simple techniques)
- Model learning (Facilitator, peers in the group)
- Group: sharing, support, mirror, practice

Identification of the stressors

- What is the situation that causes my stress? (FACTS) What is the worse for me in this?



- What are my THOUGHTS of the situation?
- What are my FEELINGS related to the situation?
- What do I do? What is my BEHAVIOR?
- What are the consequences?



Evaluation and Decision taking

- Is this situation important for me?
- Are my thoughts and feelings appropriate considered the facts?
- Can I change the situation in a positive way?
- Is it worth to act, considered the point of view of others and of my own?

Decrease bodily tensions

- Rest
- Sleep
- **Relaxation**
- Meditation



Short relaxation exercise

from the Williams LifeSkills® program

1. Picture a STOP sign, and say, "STOP," to yourself.
 2. Take three slow deep breaths, and say, "Relax," on each exhale.
 3. Inhale while **clenching fists**, then relax them on exhale.
 4. Inhale while **clenching toes**, then relax them on exhale.
 5. Inhale while **shrugging shoulders**, then relax them ...
 6. Inhale while **tilting head to right**, then straighten ...
 7. Inhale while **tilting head to left**, then straighten ...
 8. Final take a deep breath, and let relax your whole body...
 9. Focus your attention on your breathing,
 10. Begin counting: "Inhale...1, Inhale...2, Inhale...3, Inhale...4."
 11. After the fourth breath, resume counting from "Inhale...1."
 12. Continue for 3 minutes.
- Finish the relaxation, move your feet, your hands, open eyes, feel refreshed.

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Physical activity as stress reduction

Gardening
Walk, excursion
Bicycle, dance
Yoga, thai-chi, chikung
Jogging, swimming
Aerobic, body-building
Any sport....



Regular, not-exhausting (min. 30 minutes/day)

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The cognitive component

Human ability: Self-stressing



- Rumination
- Negative thoughts
- Cognitive distortions:
 - Catastrophising
 - Overgeneralization
 - Negative filtering
 - Black or white

How to manage negative thoughts?

- Thought stop
- Distraction
- Meditation / mindfulness
- „Hour of worry”
- Reframing



REFRAMING

- identify cognitive distortions
- find alternative, more realistic thoughts

Cognitive distortions:

- Overgeneralization
- Negative filtering
- Black or white
- Catastrophizing
- Emotional reasoning
- Mind reading
- Personalizing
- Labeling
- Must / should statements



Half empty



Half full



Not the right size

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Questioning negative automatic thoughts

- What's the evidence that supports this idea?
What's the evidence against it?
- Is there an alternative explanation?
- What is the worst that could happen? Could I live it through?
What is the best that could happen? **What is the most realistic outcome?**
- What is the effect of my believing the automatic thought?
What could be the effect of changing my thinking?
- What can I do to solve this problem?
- What would I tell _____ (a friend) if (s)he were in the same situation?

• Judith Beck, 1993

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Good communication, Assertion



Share your thoughts and feeling

Express your needs

Respect the needs of others

Increase the positives

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Understanding others (empathy, tolerance)



- Change your perspective
- Active listening
- Express your understanding

Understanding

≠

Agreement !!!

- Give positive feed-back, use reinforcements, express your appreciation where possible!

Increasing positives

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“It’s a special hearing aid. It filters out criticism and amplifies compliments.”

SEI
htl

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The choice is yours!

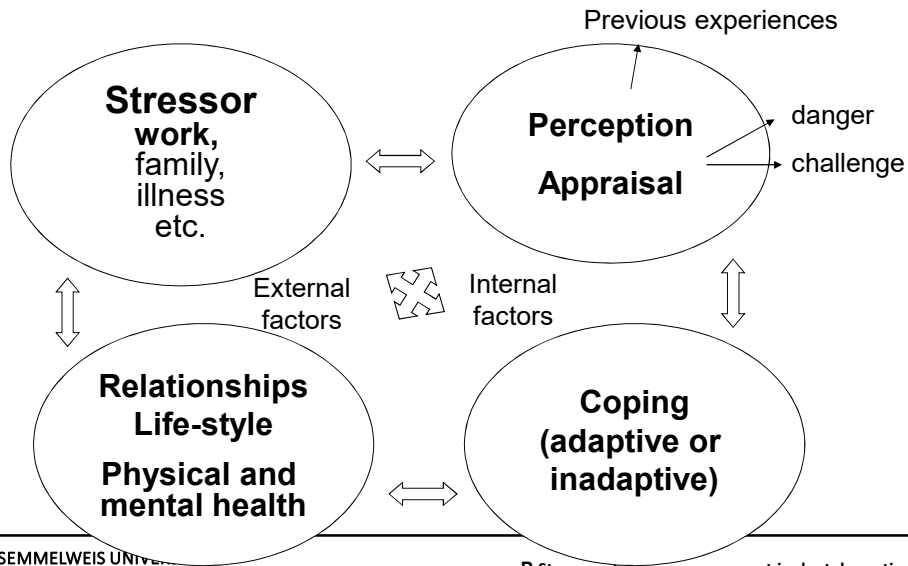


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Key message: Multimodular interventions

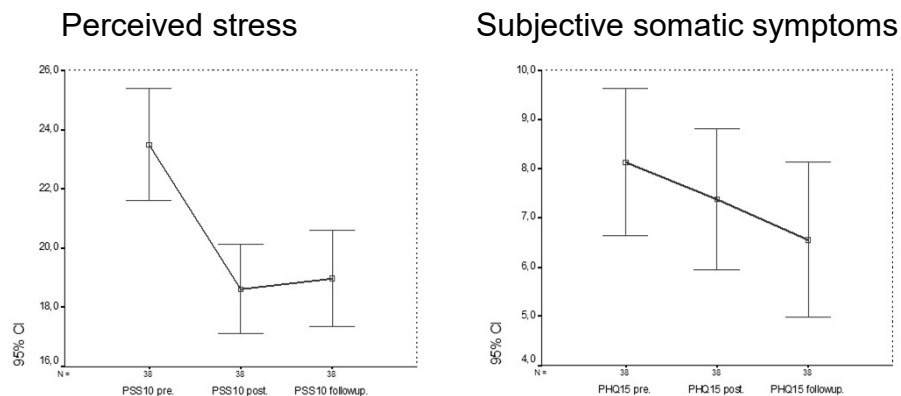


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Long term effects of Williams Lifeskills Stressmanagement training (pre, post, 6 month, N=42)



Stauder A és mtsai: Int J Behav Med. 2010;17(1):25-32.

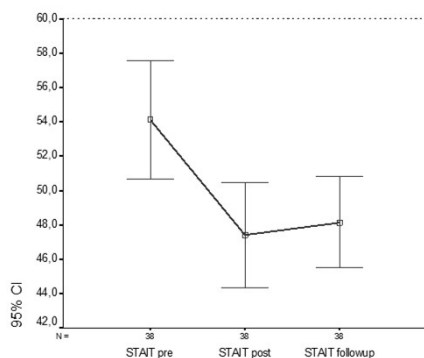
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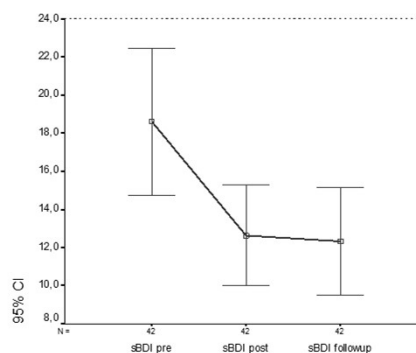
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anxiety (STAIT)



Depression (BDI)



Stauder A és mtsai: Int J Behav Med. 2010;17(1):25-32.

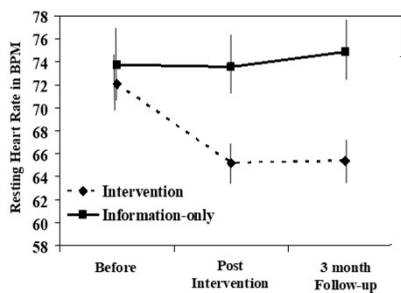
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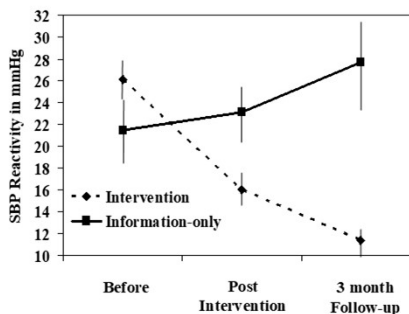
P Stress and stress management in dental practice

WLS after coronary bypass

Resting heart rate



Increase in blood pressure in stressful situation



Bishop GD és mtsai, American Heart Journal, 2005,150:602-9