Work Exposures and Development of Cardiovascular Diseases

סיכוני עבודה והתפתחות מחלות לב

Fadel M. Bahouth
Director of HEART Failure Unit
Director of Cardiovascular Research
Cardiology Department
EMMS – Nazareth Hospital

Introduction

Cardiovascular disorders (CVDs) constitute a major burden for health of working populations throughout the world with a high mortality and morbitidy rates.

Cardiovascular death accounts approximately 32% of all global deaths in 2019 (WHO 2021)

Among working-age populations, work is linked to about 10-20% of all cardiovascular disease deaths, in US.

There is a well-established relationship between the work environment and the risk of cardiovascular disease.

Multiple aspects of work environment – including

- Psychosocial stressors (job strain, effort-reward imbalance and low social support)
- Physical demands
- Shift work
- Long working hours (>= 55 hours/week)
- workplace bullying
- Exposure to environment hazards

Unfavorabile Lifestyle behaviours

- *An unhealthy diet*
- *Physical inactivity*
- *Tobacco use*
- *Harmful use of alcohol*

However, behavioural risk factors by themselves do not fully explain the population burden of CVDs

- There are some changes in CVD incidence among occupational classes.
- This is mainly due to the new types of work-related causes of morbidity associated with the recent developments in global work life, particularly in the industrialized countries:

  - rise to psychosocial and physical risk factors in the work environment such as growing competition,
  - continuous organisational changes, re-engineering
  - job insecurity
  - introduction of new technologies
  - increase of sedentary work,
  - changing patterns of working hours.

There are six common work exposures related to CVDs described in the literature:

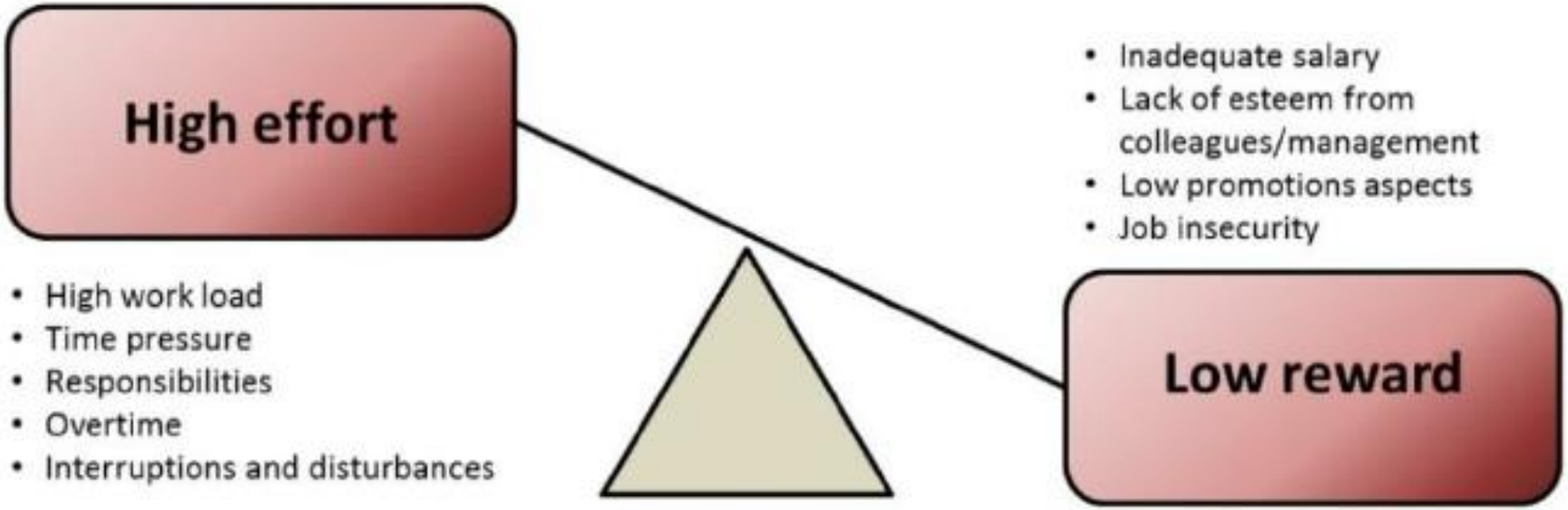
Job Strain

'job strain' is the consequence of a combination of high job demands and low individual control

The relationship between job strain and CVDs has been assessed in different populations and there is evidence it can predict myocardial infarction and cardiovascular mortality


BALANCE
WORK
LIFE

Effort–reward imbalance



Shift Work

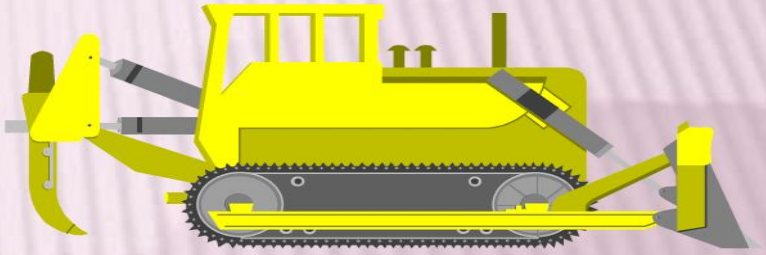
Shift work, defined as ‘work occurring outside typical daytime working hours’, is associated with an increased risk of diseases such as CVDs.

Night shift work produces a misalignment of the endogenous circadian timing system, which is associated with alterations in a wide range of physiological parameters risky for CVDs

Occupational noise

NOISE

Quite Room:
30 dBA

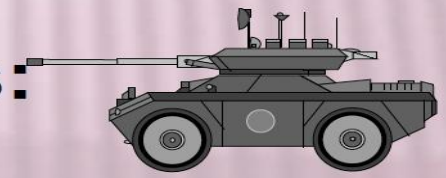


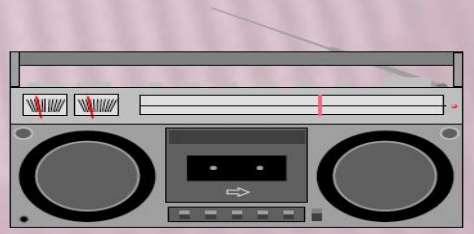
Bulldozer:
85dBA

Normal Conversation:
50 dBA

Normal City Noises:
65 dBA

Artillery/Good Rock Band:
120 dBA





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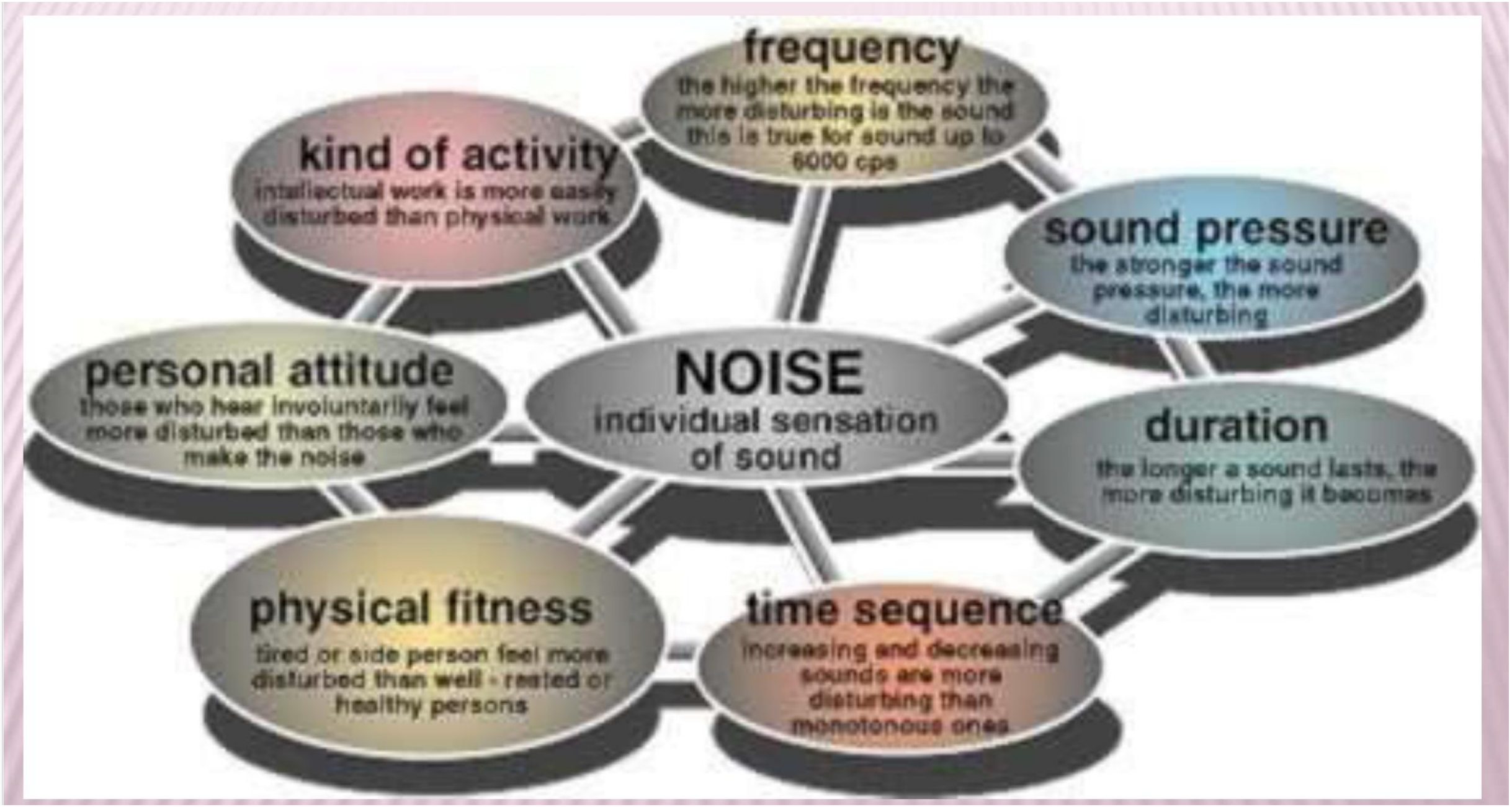

frequency
the higher the frequency the more disturbing is the sound this is true for sound up to 6000 cps
kind of activity
intellectual work is more easily disturbed than physical work
sound pressure
the stronger the sound pressure, the more disturbing
personal attitude
those who hear involuntarily feel more disturbed than those who make the noise
NOISE
individual sensation of sound
duration
the longer a sound lasts, the more disturbing it becomes
physical fitness
tired or side person feel more disturbed than well - rested or healthy persons
time sequence
increasing and decreasing sounds are more disturbing than monotonous ones

Each ↑**5 dB** → ↑ **0.5 mmHg** in systolic Bl.pr

There is evidence that suggests that occupational noise impacts CVD morbidity and mortality.

Exposure to certain levels of noise can lead to biochemical, physiological, and psychosocial alterations, interfering with the gastro-enteric system, endocrine system, CNS, and psychological alterations.

All of them related directly or indirectly to the pathogenesis of CVDs.

REVIEW PAPER

International Journal of Occupational Medicine and Environmental Health 2015;28(1):4–7
http://dx.doi.org/10.2478/s13382-014-0319-z

PREVENTION AND MANAGEMENT OF WORK-RELATED CARDIOVASCULAR DISORDERS

AKIZUMI TSUTSUMI

Kitasato University School of Medicine, Sagamihara, Japan
Department of Public Health

Prevention programs

As risk factors for cardiovascular morbidity of workers develop from many sources; including non-modifiable genetic and age-related factors, occupational factors, lifestyle and behavioural factors and social determinants.

Therefore prevention strategies need to be designed to target these multiple factors in the context of comprehensive multidisciplinary programmes

System-wide prevention needed

Effective prevention of work-related cardiovascular disorders needs a system-wide approach utilizing as much as possible existing and permanent infrastructures covering the whole working population

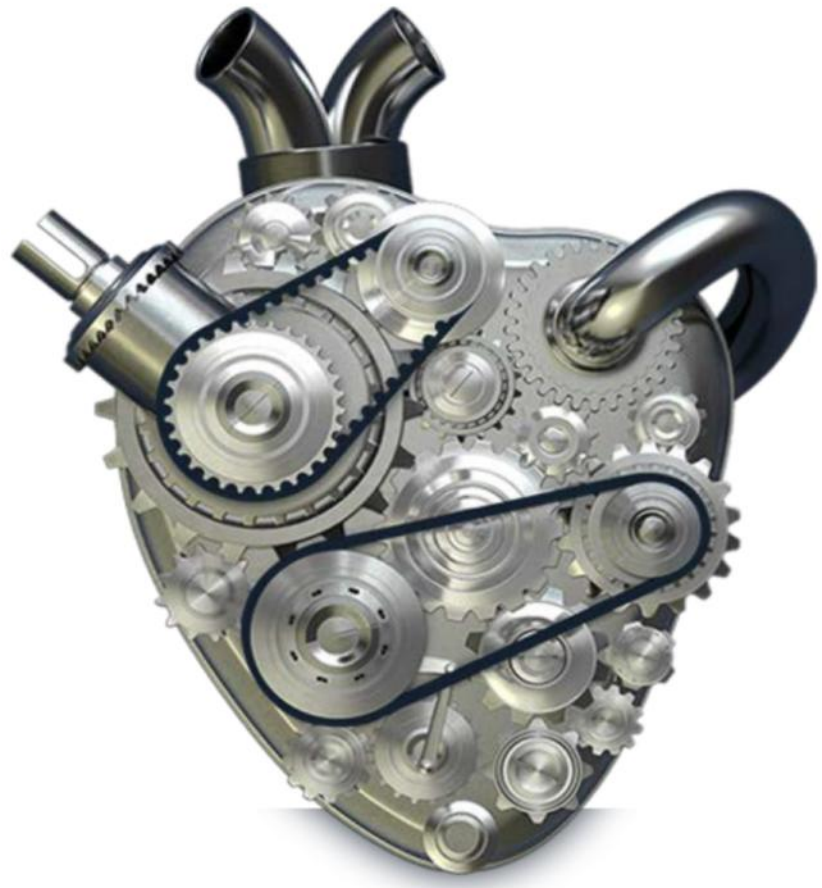
Understanding defeat is preparing for victory

Mao Ce-tung

It is estimated that interventions in the workplace could reduce health care costs by 26% and reduce workers' compensation and disability management claims by 30%.

However, optimal program delivery models have yet to be elucidated. Therefore, there is a need for additional research in this area

Questions?



0502065826
fadelbahouth@gmail.com