

## Chapter 15

# Interdisciplinary Approach to Cardiovascular Diseases for Research and Everyday Clinical Practice Purposes

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### ABSTRACT

*Cardiovascular Diseases (CVD) are perceived a leading cause of death globally. Scientists and clinicians still search for more efficient prevention, treatment, rehabilitation and care programs suitable for patients with CVD. Common social awareness and interdisciplinary effort may significantly improve current situation, but the problem is more complex. This chapter, based on research and own experiences of authors, tries to answer the question: how maximize professional resources and optimize outcomes in clinical practice. Aim of this chapter is discuss current issues which may potentially influence efficiency of CVD prevention and therapy, including prevention, modifiable and non-modifiable risk factors, ways of cardiac rehabilitation (CR) and cardiac telerehabilitation (CTR), influence of researcher-subject relationship and patient-therapist relationship as far as placebo effect.*

### INTRODUCTION

Each year cardiovascular diseases cause over 4 million deaths in 53 European countries belonging to World Health Organization. In Poland cardiovascular diseases are responsible for 50% of all deaths. This problem is a challenge for Societies of Cardiology, this is why in 2007 European Heart Health Charter

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*Table 1. The main cardiovascular risk factors*

Non-modifiable	Modifiable
<ul style="list-style-type: none"> <li>• Age</li> <li>• Gender</li> <li>• Family history for premature (in men &lt;55 years of age, in women &lt;65 years) prevalence of cardiovascular disease.</li> <li>• Genetic factors</li> <li>• History of cardiovascular disease</li> </ul>	<ul style="list-style-type: none"> <li>• Hypertension</li> <li>• Increased levels of total cholesterol and LDL - cholesterol and a decreased level of HDL - cholesterol</li> <li>• Diabetes</li> <li>• Obesity</li> <li>• Inflammatory and prothrombotic factors</li> </ul>

was established. Its aim is to reduce cardiovascular diseases burden in European Union and to reduce inequalities in access to therapies in individual countries and between countries.

Etiology of cardiovascular diseases is complex. Important role in their occurrence play risk factors. They are possible to measure traits associated with greater likelihood of cardiovascular diseases occurrence in the future. Lack of risk factors does not exclude possibility of the disease.

Risk factors may be related in a cause - effect relationship with the occurrence of the disease and their reduction reduces this risk (LDL – cholesterol concentration, hypertension). They might also be related with the disease occurrence but not be a cause of the disease, therefore having only prognostic value.

Basic practical division of risk factor covers non-modifiable and modifiable factors (tab.1).

## Age

In the lifetime numerous environmental stressors influence blood vessels causing deterioration of their function. Aging increases number of cardiovascular risk factors (arterial hypertension, hypercholesterolemia, diabetes mellitus) which leads to increase in lipid peroxidation, endothelial dysfunction and progression of arteriosclerosis.

## Risk Factors and Cardiovascular Diseases in International Studies

In international study MONICA (Multinational MONItoring of trends and determinants of CARDiovascular disease) all fatal and non-fatal cardiovascular events were recorded. 37 populations of people aged 25 to 64 were observed (in Poland in Warsaw and in Tarnobrzeg area). Trends in prevalence and intensity of basic modifiable atherosclerosis risk factors (cholesterol concentration, arterial hypertension, smoking) were monitored. Close correlation between risk factors prevalence and diseases was confirmed (Rywik et al. 1995).

International case-control INTERHEART study (Yusuf et al. 2004) as performed in 52 countries. It indicated that only nine risk factors (smoking, elevated  $A_{po}\beta/A_{po}A1$  ratio, diabetes mellitus, arterial hypertension, psychosocial factors, obesity, low fruit and vegetables consumption, lack of physical activity, excessive alcohol consumption) are responsible for 90,4% increase in risk of occurrence of first myocardial infarction. Coincidence of three risk factors (arterial hypertension, smoking, diabetes mellitus) caused 53% increase in risk compared to people with no risk factors. This dependence was noticed independently of sex, ethnicity and geographic region.

Similar observations were made in case-control INTERSTROKE study performed in 22 countries. It involved patients with heterogeneous lifestyles. Role of arteriosclerosis risk factors in occurrence of ischemic and hemorrhagic strokes was examined. Risk factors associated with stroke occurrence were:

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