

Introduction

Cardiovascular disease (CVD) remains the leading cause of morbidity and mortality worldwide, despite significant advances in the prevention, diagnosis, and management of atherosclerotic risk factors. Contemporary guidelines emphasize the necessity of a comprehensive, personalized cardiovascular risk assessment. This approach encompasses not only traditional risk factors but also psychosocial and environmental contributors, as well as chronic comorbidities.

Aims

The study aimed to optimize primary and secondary cardiovascular disease prevention by analyzing traditional and novel risk factors. Additionally, it evaluated the impact of a 1-year behavioral intervention on weight reduction in patients post-acute coronary syndrome, identifying independent predictors of intervention efficacy. Furthermore, the study analyzed trends in the prevalence of traditional cardiovascular risk factors among patients with ischemic heart disease undergoing coronary angiography and percutaneous coronary intervention (PCI) in Poland between 2014 and 2023, assessing age- and sex-specific variations. These objectives were pursued while emphasizing the pivotal role of primary care in both primary and secondary cardiovascular disease prevention.

Results

Risk factors for cardiovascular diseases: the focus on primary prevention.

Contemporary cardiovascular disease prevention demands a comprehensive approach that encompasses both traditional and novel risk factors. Among the traditional risk factors for atherosclerotic cardiovascular disease (ASCVD), the key elements include low-density lipoprotein cholesterol (LDL-C) levels, tobacco smoking, hypertension, obesity, and diabetes. The latter is characterized by a cluster of metabolic disorders, including atherogenic dyslipidemia and chronic inflammation, which accelerate the development of atherosclerosis and elevate the risk of both atherosclerotic diseases and non-atherosclerotic cardiovascular complications. Concurrently, exposure to environmental pollutants—including heavy metals, particulate matter, and toxic compounds present in the air and water—has been shown to significantly increase the risk of coronary artery disease, stroke, and heart failure. Modern research also unequivocally confirms the significance of chronic inflammation and psychosocial factors, such as chronic stress, depression, social isolation, low socioeconomic status, and mental health disorders. Implemented prevention programs demonstrate that primary care serves as an essential link in primary prevention. It delivers education on

lifestyle, physical activity, and diet; initiates obesity management; establishes individualized medical care plans based on mental, familial, and social status; and manages as well as oversees the therapeutic process while monitoring the achievement of target treatment goals.

Effectiveness of a nurse-led program of frequent educational meetings in achieving weight loss in patients with coronary artery diseases: A prospective study from Poland.

The analysis included 7,590 patients with diagnosed coronary artery disease who were enrolled in the program within 12 months of an ACS event. The intervention consisted of regular nurse consultations conducted over a 12-month period, follow-up visits every 2 months, monthly telephone contacts, and comprehensive health education targeted at lifestyle modification, increasing physical activity, dietary changes, weight reduction, smoking cessation, and improving therapeutic adherence. Anthropometric and metabolic parameters were analyzed, including body mass index (BMI), blood pressure values, LDL cholesterol levels, triglycerides, fasting plasma glucose, waist-to-hip ratio, physical activity levels, stress levels, and educational attainment assessed according to the International Standard Classification of Education (ISCED). Linear mixed-effects models were applied to account for repeated measurements over time. During follow-up, a statistically significant reduction in mean BMI was demonstrated across the overall study population, from $27.47 \pm 0.08 \text{ kg/m}^2$ to $27.19 \pm 0.08 \text{ kg/m}^2$ ($p < 0.001$). A BMI reduction of at least 5% was achieved by 6,812 patients, corresponding to 89.75% of the entire cohort. Patients achieving BMI reduction were characterized by higher baseline BMI, greater stress severity, higher blood pressure values, higher LDL, triglyceride, and glucose levels, as well as a higher waist-to-hip ratio (WHR). Significant BMI reduction was observed in both women and men, in smokers and non-smokers, and across all educational levels. In subgroup analysis, the weight reduction effect was particularly pronounced in patients with the highest stress levels and the lowest physical activity (<150 minutes per week). No significant differences were found between age groups regarding intervention efficacy. Among women, a BMI reduction of $\geq 5\%$ was achieved by 90.57% of participants, compared to 87.76% among men ($p < 0.001$). In the non-smoker group, the intervention efficacy was 90.19%, while among smokers it was 88.4% ($p = 0.01$). In the multivariable analysis, independent predictors significantly associated with BMI reduction ($p < 0.05$) included successive follow-up visits (from the third to the sixth follow-up visit, respectively: β , -0.08 ; 95% CI, -0.10 to -0.06 ; β , -0.15 ; 95% CI, -0.17 to -0.12 ; β , -0.22 ; 95% CI, -0.25 to -0.20 ; and β , -0.28 ; 95% CI, -0.31 to -0.25), higher educational attainment (ISCED levels 5–8; β , -0.43 ; 95% CI, -0.82 to -0.03), and current tobacco smoking (β , -0.77 ; 95% CI, -0.95 to -0.59).

In contrast, significant predictors of BMI increase ($p < 0.05$) included older age (β , 0.32 ; 95% CI, 0.22 to 0.42), higher blood pressure values (systolic: β , 0.04 ; 95% CI, 0.03 to 0.05 ; diastolic: β , 0.03 ; 95% CI, 0.02 to 0.04), elevated triglyceride levels (β , 0.78 ; 95%

CI, 0.61 to 0.95), increased fasting plasma glucose (β , 0.34; 95% CI, 0.30 to 0.39), higher waist-to-hip ratio (WHR) (β , 0.74; 95% CI, 0.68 to 0.80), and lower educational attainment (ISCED level 2: β , 0.79; 95% CI, 0.05 to 1.53; ISCED level 3: β , 0.55; 95% CI, 0.16 to 0.93).

Trend analysis of selected classical cardiovascular risk factors in patients with ischemic heart disease in Poland. 10 years' data of National Registry of Invasive Cardiology Procedures (ORPKI)

Trend analysis was performed using data from the National Registry of Invasive Cardiology Procedures (ORPKI), maintained by the Association of Cardiovascular Interventions of the Polish Cardiac Society and coordinated by the Jagiellonian University Collegium Medicum. This retrospective analysis included 1,993,262 consecutive patients hospitalized across 188 interventional cardiology centers, comprising 1,035,562 patients with acute coronary syndrome (ACS) and 959,328 with chronic coronary syndrome (CCS). Clinical, anthropometric, and comorbidity data related to the risk of atherosclerosis and cardiovascular events were evaluated. In the CCS group, significant temporal trends ($P < 0.05$) and interannual differences ($P < 0.05$) were observed over the decade. These included an increase in the median patient age (range, 65–69 years) and in the proportion of men undergoing procedures (range, 61%–65%), accompanied by a decline in the prevalence of current tobacco smoking (range, 16%–12%), diabetes mellitus (range, 23%–20%), prior stroke (range, 2.9%–2.5%), and previous coronary artery bypass grafting (CABG) (range, 5.8%–4.4%). Conversely, the proportion of patients with prior PCI (range, 27%–35%), previous myocardial infarction (range, 23%–27%), chronic kidney disease (range, 4.9%–6.8%), and chronic obstructive pulmonary disease (COPD) (range, 0.1%–3.7%) increased over time. The prevalence of hypertension varied across the study years but did not demonstrate a significant temporal trend. The prevalence of psoriasis remained stable throughout the study period.

Similarly, in the ACS group, significant temporal trends ($P < 0.05$) and interannual differences ($P < 0.05$) were identified. These included an increase in patient age (range, 66–68 years) and in the proportion of male patients undergoing procedures (range, 63%–65%), along with a decrease in the prevalence of diabetes mellitus (range, 24%–20%), hypertension (range, 72%–65%), prior stroke (range, 3.4%–2.4%), previous myocardial infarction (range, 26%–23%), prior CABG (range, 6.0%–4.2%), and chronic kidney disease (range, 5.8%–4.6%). In contrast, the prevalence of current smokers (range, 18%–19%), patients with prior PCI (range, 27%–30%), and individuals with COPD (range, 0.1%–3.3%) increased over time. The prevalence of psoriasis (range, 0.3%–0.5%) showed significant interannual variation without a consistent temporal trend. Sex-specific analysis revealed that women undergoing coronary angiography and PCI were significantly older and had lower body weight than men. Women also presented with a

higher prevalence of hypertension, diabetes, and chronic kidney disease. Conversely, they were less frequently active smokers and had a lower prevalence of prior stroke, myocardial infarction, PCI, CABG, psoriasis, and COPD. Age-stratified analysis by decades of life demonstrated that body weight, smoking prevalence, and the proportion of male patients decreased with advancing age. In contrast, there was a progressive increase in the prevalence of diabetes, hypertension, chronic kidney disease, COPD, and prior cardiovascular events, including stroke, myocardial infarction, PCI, and CABG.

Conclusions

The burden of cardiovascular risk factors continues to increase, and effective cardiovascular disease prevention requires consideration of both traditional and novel risk factors. Traditional cardiovascular risk factors demonstrate significant temporal trends over time. Nurse-led care and behavioral interventions are effective in reducing body weight and may represent valuable strategies in secondary prevention.