



ORIGINAL ARTICLE

Guideline-adherent therapy in patients with cardiovascular diseases in Taiwan



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KEYWORDS

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Background/Purpose: Aggressive and persistent control of risk factors is recommended for prevention of secondary comorbidities in patients with cardiovascular diseases. This study aimed to evaluate guideline recommendations for achieving targets for lipid and blood pressure (BP) control in patients with cardiovascular diseases in Taiwan.

Methods: This multicenter cohort study was conducted in 14 hospitals in Taiwan. A total of 3316 outpatients who had established cerebrovascular disease (CVD), coronary artery disease (CAD), or both were recruited. Risk factors for comorbid conditions such as high BP, sugar, hemoglobin A_{1c}, abnormal lipids, lipoproteins, and medication use were compared between patients with CVD, CAD, or both.

Results: Of all patients, 503 (15.2%) had CVD only, 2568 (77.4%) had CAD only, and 245 (7.4%) had both CVD and CAD. Compared with patients who had only CAD, those with CVD were older, had higher frequency of hypertension, and lower frequency of diabetes mellitus. Patients with CAD were more likely to receive lipid-lowering and antihypertensive drugs than those with CVD ($p < 0.001$). Only 54.8% and 55.9% of patients achieved the recommended lipid and BP control targets, respectively. Patients with CVD (adjusted odds ratio: 0.61; 95% confidence interval: 0.48–0.78; $p < 0.001$) and women (adjusted odds ratio: 0.65; 95% confidence interval: 0.55–0.78; $p < 0.001$) were less likely to achieve the recommended lipid and BP targets.

Conclusion: The guideline-recommended targets for lipids and BP in patients with CAD and CVD were still suboptimal in Taiwan. Greater efforts are required to achieve the targets, particularly in patients with CVD and in women.

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Introduction

Cardiovascular disease, including both coronary artery disease (CAD) and cerebrovascular disease (CVD), accounts for nearly half of all noncommunicable diseases and is the world's major disease burden. It is the leading cause of global mortality and results in 17.3 million deaths every year, a number that is expected to grow to 23.6 million or 24% by 2030.¹ Cardiovascular mortality has been declining slowly, particularly in high-income countries, an outcome that can probably be attributed to risk factor reduction in recent decades.^{2,3} A global target to reduce premature noncommunicable disease mortality by 25% before 2025 has been proposed by the World Health Organization. The Global Cardiovascular Disease Taskforce endorses some exposure targets on physical inactivity, hypertension, dietary salt intake, tobacco, obesity, and raised cholesterol as those required to achieve the goal.⁴

Of the numerous cardiovascular risk factors, both hypertension and dyslipidemia are commonly encountered and relatively easily modifiable; in addition, antihypertensive and lipid-lowering therapies have well-established benefits in the primary and secondary prevention.^{5–7} A nationwide follow-up of ischemic stroke patients revealed that treatment with antiplatelets, oral anticoagulants, antihypertensives, and statins can improve secondary prevention in routine care.⁸ However, hypertension and dyslipidemia are often undertreated, and established therapies, including antiplatelets, statins, antihypertensive agents, are consistently underused in atherothrombotic patients worldwide.⁹ In the international REduction of Atherothrombosis for Continued Health (REACH) Registry Europe, less than 60% of patients with stable atherothrombotic diseases had good control of the following five major cardiovascular risk factors: systolic blood pressure (BP)

<140 mmHg, diastolic BP <90 mmHg, fasting glycemia <110 mg/dL, total cholesterol <200 mg/dL, and nonsmoking.¹⁰

Among the cardiovascular disease patients, patients with CVD were probably more likely not to receive antihypertensive, lipid-lowering, and antiplatelet therapies than those with CAD.^{11–14} The guideline-recommended treatment targets were also less likely to be achieved in CVD patients than in CAD patients. In the Taiwan Stroke Registry, only 38.7% of acute ischemic stroke patients with low-density lipoprotein cholesterol (LDL-C) ≥ 100 mg/dL received lipid-lowering drugs before discharge.¹⁵ In addition, women with cardiovascular diseases were reported to be less likely to receive antihypertensives, antiplatelets, and statins than men.^{12,16,17} This study aimed to evaluate to what extent the guideline-recommended targets for several comorbid conditions are achieved in patients with CVD and/or CAD selected from a multicenter registry.

Patients and methods

Study population

This study was conducted from a multicenter observational registry, the Taiwanese Secondary Prevention for patients with AtheroRosCLErotic disease (T-SPARCLE) Registry, from 14 teaching hospitals in Taiwan.¹⁸ This registry attempts to recruit and follow-up a large population of patients with cardiovascular diseases who have been receiving secondary prevention therapies so as to define the current status of these therapies and their effects on morbidity and mortality in Taiwan.

Adult patients who had stable symptomatic atherosclerotic diseases, including CAD and CVD, were recruited. Patients with CAD were defined as those who had significant coronary

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