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SCOPE of Cardiometabolic Health in Asia-Pacific: Shaping Cardiometabolic Outcomes With Personalized Treatment Strategies and Patient Empowerment

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Abstract

Cardiometabolic diseases, encompassing cardiovascular disease, type 2 diabetes mellitus, and metabolic syndrome, represent a growing public health crisis, particularly in the Asia-Pacific region. Rapid dietary and lifestyle transitions have exacerbated these conditions, making them the leading cause of mortality in the region. Recognizing the urgent need for a comprehensive, patient-centered approach, the Cardiometabolic Asia Summit brought together 260 clinicians from 15 countries to discuss innovative strategies for improving disease awareness, patient education, and long-term treatment adherence. Key discussions focused on optimizing hypertension management through integrated treatment strategies, balancing glycemic control with cardiovascular risk reduction in diabetes, and leveraging real-world evidence alongside randomized controlled trials to inform clinical decision-making. Notably, a majority of clinicians endorsed single-pill combination therapies and stepwise medication regimens to enhance adherence. Additionally, digital health innovations, including AI-powered analytics and remote monitoring, emerged as pivotal tools for improving patient outcomes. This summit underscored the importance of holistic, personalized treatment approaches and reinforced the critical role of patient empowerment in mitigating the burden of cardiometabolic diseases. By integrating traditional and emerging therapeutic strategies, the Asia-Pacific region can advance towards more effective and sustainable cardiometabolic care.

Keywords: Cardiometabolic diseases; Asia-Pacific; Holistic care; Clinical outcomes; Medication adherence

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Introduction

Cardiometabolic disease is a major determinant of the global burden of disease, integrating a complex spectrum of conditions such as cardiovascular disease (CVD), type 2 diabetes mellitus (T2DM), and metabolic syndrome. Recent studies underscore the alarming global rise in cardiometabolic diseases, with the Asia-Pacific region emerging as a critical hotspot [1]. This region now accounts for over 60% of the global disease burden, positioning cardiometabolic diseases the leading cause of death. The future outlook for CVD and diabetes in Asia-Pacific is alarming. By 2050, CVD cases are expected to surge by 109% to 729.5 million, with related deaths increasing by 91.2% to 24.1 million [2]. Similarly, diabetes prevalence is projected to more than double, exceeding 1.31 billion cases, with age-standardized prevalence rates surpassing 10% in several Asian-Pacific countries. High body mass index (BMI) alone contributes significantly to diabetes-related disability-adjusted life years, particularly in South and East Asia [3]. Cardiometabolic diseases vary across the Asia-Pacific region, with higher prevalence in Central and Eastern Asia and a rising burden due to aging and lifestyle changes. Central Asia has the highest age-standardized cardiovascular mortality rate, while East, South, and Southeast Asia are expected to see the largest

increase in crude cardiovascular mortality rates [4]. This is because of the rapid shift from traditional diets to Western dietary patterns, along with increasingly sedentary lifestyles, which has accelerated the spread of chronic conditions. This trend is further intensified by key risk factors such as high cholesterol, hypertension, obesity, smoking, and physical inactivity. Moreover, broader societal factors, including healthcare accessibility, education, and urbanization, continue to exacerbate these health challenges [5, 6].

Recognizing the urgent need for an integrated and patient-centered approach to treatment, a consortium of esteemed academic physicians convened at the Cardiometabolic Asia Summit. The Cardiometabolic Asia Summit adopted a structured, multi-faceted approach to gathering insights and developing expert-guided strategies for managing cardiometabolic diseases in the Asia-Pacific region. The summit served as a crucial platform for exchanging clinical insights and addressing the growing burden of cardiometabolic diseases.

The summit brought together 260 expert clinicians from 15 countries across the Asia-Pacific region, including Hong Kong, Thailand, Myanmar, India, Pakistan, Malaysia, the Philippines, Bangladesh, Vietnam, Singapore, Cambodia, China's mainland, Indonesia, Korea, and Taiwan. These participants represented various specialties such as cardiology, endocrinology, nephrology, and internal medicine. Selection was based on their clinical expertise, research contributions, and leadership in the field.

The event featured a diverse range of sessions designed to facilitate knowledge exchange and consensus-building, including plenary sessions with presentations by leading experts, panel discussions exploring contemporary challenges and innovative solutions, expert polls capturing real-time opinions on hypertension treatment strategies, diabetes risk stratification, and digital health innovations, as well as interactive workshops focusing on practical applications and patient-centered strategies. Case-based discussions allowed clinicians to present real-world patient scenarios, refining treatment approaches and addressing region-specific healthcare challenges.

The experts' collective opinion expressed at this event highlighted the need for a comprehensive, patient-centered approach to managing these chronic conditions: 1) the holistic harmony: aligning patient care with adherence goals; 2) balancing sugars and heart health - low-risk and high-risk patients; 3) bridging the gaps in cardiometabolic diseases: complementary approach of randomized controlled trials (RCTs) and real-world evidence (RWE) studies.

The Holistic Harmony: Aligning Patient Care With Adherence Goals

In the Asia-Pacific region, the escalating burden of cardiometabolic diseases demands a holistic approach to patient care that transcends traditional treatment boundaries. Addressing these interconnected conditions requires a comprehensive strategy that not only targets the physiological aspects but also fosters patient adherence, a critical factor for better patient outcomes.

Hypertension, a complex and multi-faceted condition, remains a leading contributor to the global burden of CVDs and associated mortality [1]. Hypertension rarely presents in isolation; it is often accompanied by other significant risk factors such as elevated low-density lipoprotein (LDL) cholesterol levels, obesity, and T2DM [7]. Therefore, addressing only elevated blood pressure is insufficient. A comprehensive approach that simultaneously targets these interconnected cardiometabolic risk factors is crucial for delivering holistic care to hypertensive patients. The importance of such an integrated strategy is further highlighted. Specifically, an integrated treatment approach utilizing combination therapies, including angiotensin-converting enzyme (ACE) inhibitors, calcium channel blockers, and statins for the management of hypertension patients with cardiometabolic comorbidities was supported by 85% of delegates. Notably, 78% of clinicians agreed that the single-pill combination regimens have significantly enhanced medication adherence among patients managing hypertension alongside T2DM, and hyperlipidemia.

However, achieving optimal outcomes from such integrated treatment strategies requires a critical focus on patient adherence, which remains a significant challenge in chronic disease management. Nearly 50% of patients globally fail to adhere to their prescribed medication regimens particularly in chronic conditions. In such populations, non-adherence rates can reach up to 80% [8]. To combat this issue, clinicians identified simplifying the medication regimen as the most effective strategy, with 64% of participants. This was followed by patient education programs, which were favored by 27% of respondents (Fig. 1). Additionally, a stepwise approach to medications starting with dual therapy and gradually increasing based on patient response was recommended to reduce the pill burden and improve adherence [9]. Furthermore, 87% of participants expressed a commitment to enhancing patient-doctor communication by implementing more frequent follow-ups and developing personalized treatment plans for patients with multiple comorbidities. This comprehensive approach, which is now widely endorsed in the Asia-Pacific region, not only focuses on streamlining medication protocols but also on fostering strong physician-patient relationships.

Balancing Sugars and Heart Health - Low-Risk and High-Risk Patients!

Diabetes mellitus continues to be one of the most pervasive chronic conditions globally, with CVD reigning as the leading cause of morbidity and mortality [10]. Recent evidence reaffirms that even a modest reduction of 1% in glycated hemoglobin levels can significantly diminish the risk and improve the patient outcomes. The concepts of the "legacy effect" and "metabolic memory" have gained attention, emphasizing that early diagnosis and optimal glycemic control in patients with pre-diabetes and T2DM are crucial in preventing the cascade of future complications [11].

The management strategies for low-risk versus high-risk patients with diabetes were addressed. For low-risk patients, lifestyle interventions, including diet and exercise, are increasingly recognized as the cornerstone of management. A significant 39.73% of healthcare professionals (n = 260) identified

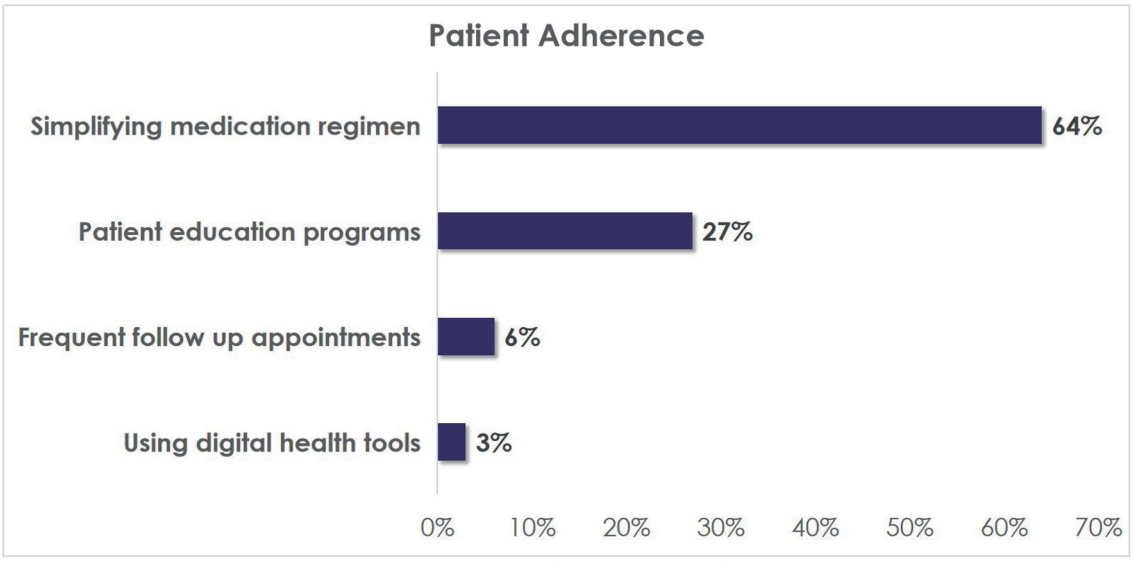

Figure 1. Most effective patient adherence strategies to cardiovascular drugs.

lifestyle modification as their primary approach, recognizing it as the key pillar of management of diabetes due to its foundational role in addressing the root causes of the disease. Of the participants, 35.62% prioritized aggressive glycemic control, recognizing its vital role in mitigating the early onset of complications. Cardiovascular risk factor modification also remains a critical focus, with 16.44% of respondents emphasizing its importance in a comprehensive management plan.

Conversely, for high-risk patients with diabetes, the therapeutic focus shifts decisively towards reducing cardiovascular events, a priority for an overwhelming 64.47% of participants (n = 260). This strategic emphasis reflects the acute need to address the heightened cardiovascular risks inherent in this population. Achieving target glycated hemoglobin levels remains a key objective, prioritized by 32.89% of respondents, as it is closely linked to the prevention of both microvascular and macrovascular complications (Fig. 2). However, the preservation of renal function and the minimization of hypoglycemia risk are notably less emphasized in high-risk patients, with only 1.3% of participants identifying these as their primary treatment goals. These management differences between low-risk and high-risk patients highlight an evolving and increasingly sophisticated approach to diabetes care. The balance between preventing cardiovascular events and maintaining optimal glycemic control is finely tuned to meet the specific needs of each patient group. As the prevalence of diabetes continues to rise across the Asia-Pacific region, these tailored strategies will be essential in reducing the significant burden of the disease and improving patient outcomes.

Recent advancements in sodium-glucose cotransporter-2 (SGLT-2) inhibitors (e.g., empagliflozin, dapagliflozin) and glucagon-like peptide-1 (GLP-1) receptor agonists (e.g., liraglutide, semaglutide) have transformed cardiometabolic disease management. SGLT-2 inhibitors lower blood sugar by promoting glucose excretion and offer cardiovascular and renal benefits, reducing heart failure risk and slowing chronic kidney disease (CKD) progression. GLP-1 receptor agonists enhance insulin secretion, suppress appetite, and significantly lower cardiovascular risk while aiding in weight loss. Recent trials confirm their protective effects beyond diabetes, making them essential in modern treatment strategies [12].

Bridging the Gaps in Cardiometabolic Diseases: Complementary Approach of RCTs and RWE Studies

In the evolving landscape of cardiometabolic research, the traditional reliance on RCTs is increasingly complemented by the integration of RWE studies. While RCTs remain the gold standard, offering critical insights into the efficacy and safety of interventions within controlled environments, they often fail to capture the full spectrum of complexities that manifest in broader, more diverse real-world populations [13]. To achieve a more nuanced understanding of treatment outcomes, especially in the diverse Asia-Pacific region, incorporating RWE into the research framework is not only beneficial but also essential.

The Asia-Pacific region, with its unique demographic and socio-economic diversity, presents an ideal setting for the integration of RWE into clinical research. Recent data from the Asian Cardiovascular Research Consortium highlight that nearly 75% of the region's cardiovascular trials now incorporate elements of RWE, reflecting a significant shift towards a more holistic approach to understanding patient outcomes [14]. For example, an RWE study offers supporting the use of combination approach with metabolic modulators (e.g., trimetazidine) and hemodynamic agent for the management of stable angina. This study demonstrates that such combination therapies are effective in significantly reducing episodes of angina, thereby improving adherence and enhancing patient quality of life [15].

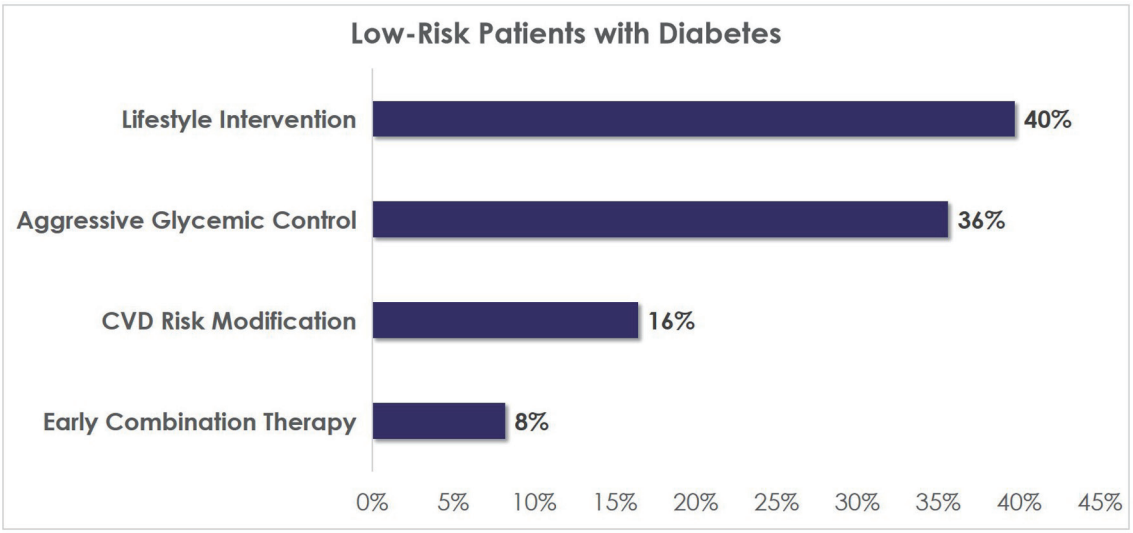

Figure 2. Management of low-risk and high-risk patients with diabetes.

In managing angina within the Asia-Pacific context, recent surveys reveal that the most pressing challenge remains improving the quality of life which is a concern voiced by 58.11% of healthcare professionals. This is particularly pertinent in a region where lifestyle and socio-economic factors significantly influence disease outcomes. Better symptom control is also a key priority, with 20.51% of clinicians identifying it as the biggest challenge in angina management. Reducing hospitalization rates, a critical measure of healthcare efficiency, is seen as the primary challenge by 11.1% of respondents. Meanwhile, the need for more effective medications that cater specifically to the metabolic and genetic profiles of Asian patients is prioritized by 10.25% of participants (Fig. 3).

As the region continues to grapple with a rising burden of cardiometabolic diseases, the blending of RCTs with RWE will be crucial in bridging the gaps in understanding and improving patient outcomes across diverse populations.

The future of cardiometabolic care in the Asia-Pacific hinges on adopting innovative strategies that integrate traditional evidence with real-world data, fostering a more comprehensive and inclusive understanding of patient needs. To advance this vision, the summit has called for the accelerated adoption of digital health innovations such as AI-powered predictive analytics, advanced data analytics, remote monitoring through wearable devices, and personalized digital

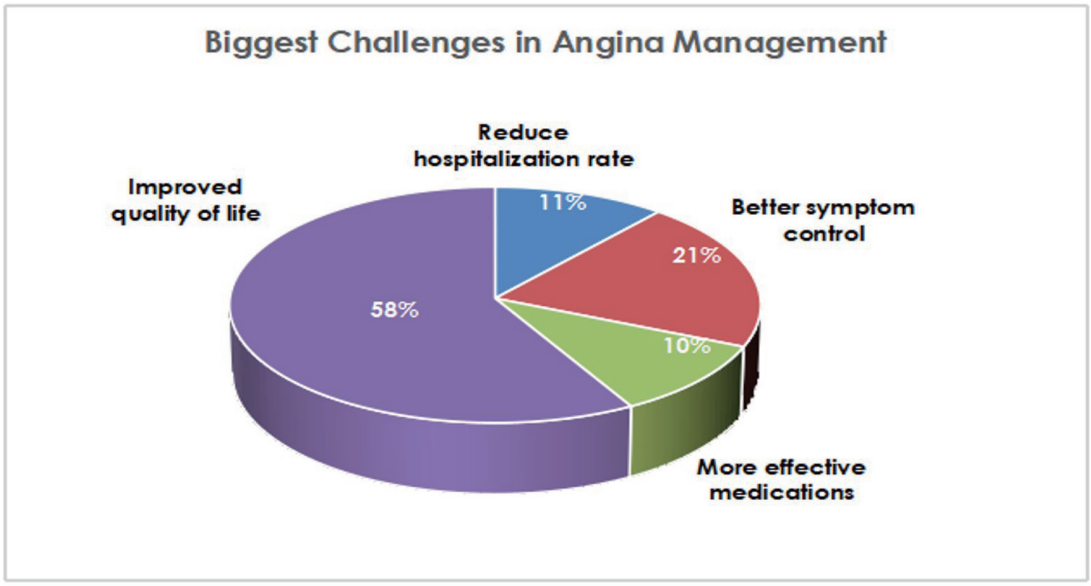

Figure 3. Biggest challenges in managing patients with angina.

therapeutics to enhance early diagnosis, improve adherence, and optimize long-term management.

Conclusion

The Cardiometabolic Summit highlighted the critical need for a patient-centered approach to address the growing burden of cardiometabolic diseases in the Asia-Pacific region. It underscored the necessity of integrating holistic, personalized treatment approaches with RWE to achieve more effective outcomes. Adherence is an important element to enhance the quality of life of patients. Additionally, the summit also emphasized the potential of novel therapies and combination treatments in managing complex cardiometabolic conditions. It also reaffirmed the critical role of patient education, empowerment, and enhanced physician-patient communication, recognizing these factors as pivotal in improving adherence and achieving long-term success in disease management.

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Conflict of Interest

None to declare.

Author Contributions

All authors made a substantive contribution to the article. Aaron Ong Hean Jin: conceptualization (lead) and writing - original draft (lead); Rohit Khurana: review and editing (equal); Tiny Nair: conceptualization (lead) and original draft (supporting); Danon Kaewkes: review and editing (equal); Muhammad Adeel Qamar: conceptualization (supporting) and original draft (supporting); Siti Elkana Nauli: data curation;

Peng Xin Yin: conceptualization (supporting) and original draft (supporting); Angelique Bea Uy-Jumauan: review and editing (equal); Byung Wan Lee: review and editing (equal); Eusha A.F. Ansary: formal analysis (lead); Edward Wing Hung Sitt: conceptualization (supporting) and formal analysis (supporting); Htun Lwin Nyein: review and editing; Touch Khun: review and editing.

Data Availability

The data supporting the findings of this study are available from the corresponding author upon reasonable request.

Abbreviations

ACE: angiotensin-converting enzyme; BMI: body mass index; CVD: cardiovascular disease; CKD: chronic kidney disease;

GLP-1: glucagon-like peptide-1; LDL: low-density lipoprotein; RCT: randomized controlled trial; RWE: real-world evidence; SGLT2: sodium-glucose cotransporter-2; T2DM: type 2 diabetes mellitus

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