fortune Journals

Review Article

CARDIOLOGY AND CARDIOVASCULAR MEDICINE

ISSN: 2572-9292

The Perfect Combination: Semaglutide and Whole-Food Plant-Based Diet in Chronic Disease Care

Dasaad Mulijono[1-3 *]

Abstract

As the global burden of chronic disease escalates, clinicians are confronted with a pivotal decision: manage symptoms through costly, lifelong pharmaceutical interventions or address underlying causes via sustainable lifestyle changes. Semaglutide, a glucagon-like peptide-1 (GLP-1) receptor agonist, has rapidly emerged as a leading pharmacological solution, delivering notable short-term benefits in weight management and glycaemic control. However, these advantages often diminish upon discontinuation, accompanied by potential adverse effects, underscoring the need for sustainable therapeutic strategies. In contrast, whole-food plant-based diets (WFPBDs) offer a holistic, economically feasible approach that directly targets and rectifies the root metabolic dysfunctions driving chronic illnesses.

At Bethsaida Hospital, Indonesia, under the pioneering leadership of Prof. Dasaad Mulijono (DM), we have innovatively integrated Semaglutide with WFPBD to leverage the strengths of both interventions. Prof. Dasaad Mulijono's groundbreaking approach has resulted in remarkable clinical outcomes, including unprecedented remission rates for hypertension, substantial diabetes reversal, dramatic reductions in LDL cholesterol and restenosis following cardiac procedures, normalization of kidney function, and sustained weight management. These outcomes represent clinical success and a revolutionary shift toward lifestyle-driven reversal of chronic diseases. Further amplifying this success is our cutting-edge use of artificial intelligence (AI), which ensures enhanced patient adherence and personalized dietary management, underscoring Bethsaida Hospital's position as a global leader in the care of chronic diseases. This combined approach heralds a transformative era, redefining chronic diseases as manageable but reversible conditions, revolutionizing patient health outcomes and quality of life.

Keywords: Semaglutide; Whole-Food Plant-Based Diet; Chronic Disease Reversal; Lifestyle Medicine

Introduction

Modern medicine is at a transformative crossroads. The prevalence of chronic diseases, particularly cardiometabolic disorders like obesity, type 2 diabetes (T2D), coronary artery disease (CAD), hypertension, and dyslipidaemia, continues to escalate globally [1-3]. Pharmaceutical interventions such as Semaglutide, a GLP-1 receptor agonist, have gained significant popularity due to their effectiveness in promoting weight loss, glycaemic control, and cardiovascular risk reduction. Semaglutide acts through multiple beneficial mechanisms, including enhanced glucose-dependent

Affiliation:

[1]Department of Cardiology, Bethsaida Hospital, Tangerang, Indonesia

[2]Indonesian College of Lifestyle Medicine, Indonesia

[3]Department of Cardiology, Faculty of Medicine, Prima University, Medan, Indonesia

***Corresponding author:**
Prof. Dasaad Mulijono, Department of Cardiology, Bethsaida Hospital, Tangerang, Indonesia

Citation: Dasaad Mulijono. The Perfect Combination: Semaglutide and Whole-Food Plant-Based Diet in Chronic Disease Care. Cardiology and Cardiovascular Medicine. 9 (2025): 398-403.

Received: August 12, 2025
Accepted: Spetember 01, 2025
Published: September 02, 2025

Mulijono D., Cardiol Cardiovasc Med 2025
DOI:10.26502/fccm.92920463

insulin secretion, reduced glucagon release, improved beta-cell functionality, decreased inflammation, reduced oxidative stress, and direct cardiovascular protective effects. However, despite these substantial short-term benefits, Semaglutide alone often fails to deliver lasting health improvements without ongoing administration, and cessation frequently results in relapse or reversal of achieved metabolic gains [4-20].

In contrast, dietary interventions particularly WFPBDs offer sustainable and cost-effective solutions that target the fundamental metabolic dysfunctions underlying chronic diseases. WFPBDs emphasize the consumption of minimally processed vegetables, fruits, whole grains, legumes, nuts, and seeds, providing robust anti-inflammatory, antioxidative, and cardioprotective effects. The dietary approach effectively mitigates endothelial dysfunction, optimizes lipid profiles, enhances insulin sensitivity, supports gut microbiota health, and reduces systemic inflammation and oxidative stress, collectively contributing to profound cardiometabolic improvements. Moreover, WFPBD facilitates behavioural transformations essential for long-term adherence, enabling patients to maintain health gains without pharmacological dependency [21-29].

At Bethsaida Hospital, under the visionary leadership of Prof. DM, we have developed an innovative therapeutic paradigm by integrating Semaglutide with WFPBD. Semaglutide serves a crucial bridging role by rapidly reducing cravings and appetite for unhealthy foods, enabling patients to transition more easily to and adhere to plant-based nutritional practices. This integrated approach capitalizes on the pharmacological jumpstart provided by Semaglutide and consolidates the therapeutic benefits through sustained dietary and lifestyle modifications. Clinical evidence from Bethsaida Hospital demonstrates remarkable outcomes, including remission of hypertension, reversal of diabetes, a significant reduction in LDL-cholesterol levels, normalization of weight, improved kidney function, and a dramatically reduced rate of restenosis. This comprehensive approach, further supported by AI-driven patient education and dietary adherence monitoring, exemplifies a progressive model in chronic disease care, ensuring transformative and lasting patient outcomes and improved quality of life.

Semaglutide

Semaglutide has revolutionized the treatment of obesity and T2D by promoting weight loss and improving glycemic control. Yet, it is not without challenges [4-20]:

- High Costs limit access, particularly in low-income settings.
- Adverse Effects such as gastrointestinal distress and the risk of pancreatitis.
- Dependency, with weight often regained after discontinuation.
- Limited Scope, acting only on symptoms without addressing the metabolic roots of disease.

However, Semaglutide provides critical cardiovascular benefits, including decreased cardiovascular death, non-fatal myocardial infarction, and non-fatal stroke. Mechanistically, Semaglutide decreases oxidative stress, protecting endothelial cell function, reduces vascular smooth muscle cell reactive oxygen species (ROS) production and proliferation, mitigates thrombosis, decreases inflammation and atherogenesis, increases natriuresis and diuretic effects, and downregulates the renin-angiotensin-aldosterone system (RAAS) activation. Additionally, Semaglutide significantly influences metabolic pathways by enhancing glucose-dependent insulin secretion, reducing glucose-dependent glucagon secretion, and improving beta-cell functionality by increasing insulin biosynthesis and reducing beta-cell apoptosis.

Furthermore, Semaglutide has notable central effects on the brain that enhance satiety, reduce food intake and body weight, decrease lipotoxicity, and improve insulin sensitivity. In hepatic tissues, it decreases glucose production, enhances insulin sensitivity, reduces de novo lipogenesis, and reduces hepatic steatosis. Gastrointestinally, it slows gastric emptying, further contributing to improved metabolic control.

Mechanistic Insights into the Cardiometabolic Benefits of WFPBD

The benefits of implementing WFPBD can be summarized as follows [21-24]:

1. Mitigation of Adverse Diet-Induced Effects: WFPBD counters endothelial dysfunction, oxidative stress, hypertension, dyslipidaemia, systemic inflammation, and reduces pro-inflammatory mediators, such as trimethylamine N-oxide (TMAO) and advanced glycation end-products (AGEs), through its anti-inflammatory, antioxidative, and metabolic regulatory properties.
2. Enhancement of Endothelial Function and Blood Pressure Regulation:
    - Dietary nitrates from leafy greens metabolize to nitric oxide (NO), enhancing vasodilation.
    - Antioxidants from polyphenols and flavonoids stabilize NO, maintaining vascular integrity.
    - Gut microbiome modulation through fibre-rich diets boosts NO production.
3. Optimization of Lipid Profile:
    - Soluble fibre reduces LDL-C by enhancing bile acid excretion.
    - Healthy fats (monounsaturated/polyunsaturated) improve lipid profiles.
    - Plant sterols/stanols impede cholesterol absorption.

Mulijono D., Cardiol Cardiovasc Med 2025
DOI:10.26502/fccm.92920463

- Gut microbiota-derived short-chain fatty acids (SCFAs) regulate cholesterol metabolism.

4. Facilitation of Weight Management:
   - Reduced caloric density and high dietary fiber enhance satiety and regulate appetite.
   - Fiber-driven gut microbiota supports metabolism and fat oxidation.
5. Regulation of Blood Glucose and Insulin Sensitivity:
   - Dietary fibre modulates glucose absorption, preventing spikes.
   - Polyphenols enhance insulin receptor function.
   - Gut microbiota-produced SCFAs improve glucose metabolism and insulin efficiency.
6. Attenuation of Systemic Inflammation:
   - Polyphenols and antioxidants reduce oxidative stress.
   - Omega-3 fatty acids lower inflammatory biomarkers.
7. Reduction of Oxidative Stress:
   - Antioxidant-rich nutrients neutralize ROS.
   - Phytochemicals protect against oxidative damage.
8. Promotion of Healthy Gut Microbiota:
   - SCFA-induced vascular relaxation enhances cardiovascular health.
   - Gut microbiota reduces TMAO production and systemic inflammation.
9. Enhancement of Mitochondrial Function:
   - Polyphenols and nitrates stimulate mitochondrial biogenesis and improve metabolic efficiency.
   - Antioxidants and omega-3 fatty acids enhance mitochondrial function and reduce oxidative stress.
10. Telomere Preservation and Longevity:
    - Antioxidants and polyphenols reduce oxidative stress and inflammation, preserving telomeres.
    - Dietary control improves DNA repair mechanisms and metabolic stability, promoting longevity.

This integrative model, combining pharmacological initiation with sustainable nutritional strategies, significantly advances chronic disease management and positions WFPBD as a central dietary intervention for cardiometabolic health. It promises transformative patient outcomes and enhanced quality of life.

Clinical Evidence at Bethsaida Hospital

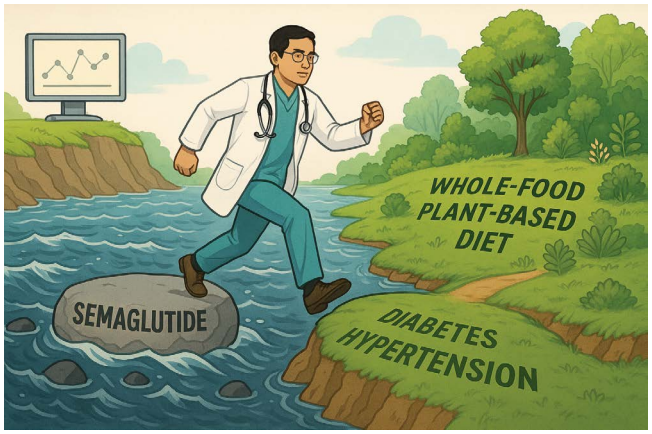
At Bethsaida Hospital, we have pioneered a comprehensive and integrative approach by combining Semaglutide with the WFPBD as frontline therapy for managing chronic conditions, including CAD, T2D, obesity, hypertension, and dyslipidaemia. Semaglutide serves an essential bridging function, effectively reducing patients' cravings and appetite for highly palatable, unhealthy foods. This pharmacological support enables patients to initiate dietary transitions more seamlessly and facilitates long-term adherence to WFPBD by curbing initial dietary challenges and cravings.

Under the clinical leadership of Prof. DM, our hospital has meticulously documented significant clinical improvements across diverse patient populations. These showcasing outcomes are superior to those achieved with traditional pharmaceutical approaches alone. Our detailed observations and clinical data demonstrate:

- Hypertension Remission: Many hypertensive patients achieve complete remission, eliminating the need for antihypertensive medications.
- Diabetes Reversal: Most patients with T2D successfully achieve and sustain HbA1c levels below 6% without requiring insulin therapy, highlighting a profound metabolic recovery.
- LDL-C Reduction: Integration of WFPBD, combined judiciously with lipid-lowering therapies such as statins and ezetimibe, achieves LDL-C targets of less than 30 mg/dL, substantially surpassing conventional lipid management guidelines.
- Kidney Function Recovery: Patients with previously moderate renal impairment frequently experience normalization of creatinine levels, reflecting substantial improvements in renal filtration and reduced nephrological stress.
- Weight Normalization: Our combined therapeutic strategy consistently achieves BMI normalization, guiding patients to an optimal BMI range of 21–22, which significantly reduces obesity-related complications and improves overall health.
- Restenosis Reduction: Remarkably low restenosis rates of approximately 2% have been recorded post-interventional procedures, accompanied by evidence of regression in atherosclerotic plaque, indicating robust cardiovascular protective effects.

These outcomes underscore the synergistic potential of combining Semaglutide with a WFPBD, leveraging pharmacological initiation to overcome immediate physiological barriers, while nutritional strategies provide sustained metabolic restoration and disease reversal. This integrated clinical model represents a substantial advancement in chronic disease care, promising significant improvements in patient health outcomes and quality of life.

Mulijono D., Cardiol Cardiovasc Med 2025
DOI:10.26502/fccm.92920463



Comparative Health Benefits

Health Metric	Semaglutide	Whole-Food Plant-Based Diet (WFPBD)
Weight Loss	Reduces appetite and body weight	High fibre, natural satiety, sustained weight loss
Cardiovascular Health	Reduces MACE, lowers BP	Lowers LDL-C, reverses atherosclerosis
Diabetes Control	Lowers HbA1c	Reverses insulin resistance, normalises glucose
Kidney Health	Slows nephropathy	Normalises creatinine, reduces stress
Inflammation	Lowers systemic inflammation	Rich in antioxidants and anti-inflammatory
Nitric Oxide	Boosts NO	Leafy greens enhance NO levels
Stroke Prevention	Reduces vascular damage	Prevents plaque and improves flow
Lipid Profile	Lowers LDL and TG	Profound LDL reduction without drugs
Gut Health	Improves microbiome via GLP-1	Prebiotics support diverse, healthy flora
Longevity	Supports metabolic health	Promotes overall wellness and lifespan

AI as an Enabler for WFPBD Adherence

At Bethsaida Hospital, AI has been strategically integrated to significantly enhance patient adherence and optimize the effectiveness of the WFPBD. Recognizing that sustained dietary adherence is critical to achieving long-term health outcomes, our sophisticated AI-driven platform provides comprehensive support by personalizing and monitoring nutritional interventions.

Our advanced AI platform encompasses several key functionalities:

- Individualized Meal Planning: Tailored dietary recommendations and customized meal plans are generated based on an individual's health status, metabolic profile, nutritional preferences, and cultural considerations, maximizing patient acceptance and adherence.
- Continuous Health Metrics Tracking: Real-time monitoring of key health indicators, including blood glucose levels, body weight, lipid profiles, and blood pressure, enables timely adjustments and ensures alignment with therapeutic goals.
- Intelligent Engagement and Communication: The system proactively sends personalized reminders, motivational tips, dietary reinforcement messages, and educational content, fostering patient engagement and compliance.
- Adherence Analysis and Outcome Prediction: The platform utilizes predictive analytics to evaluate dietary adherence patterns and forecast potential health outcomes, enabling proactive interventions and continuous improvement in patient management strategies.
- Behavioural Insights and Adjustment: AI-driven insights provide clinicians and patients with actionable data regarding dietary behaviour, facilitating targeted interventions and promoting behavioural transformation.
- Comprehensive Patient Education: Integrated educational modules supported by AI enhance patients' understanding of dietary choices and their health impacts, empowering informed decision-making and promoting sustained lifestyle changes.

By integrating AI with WFPBD, Bethsaida Hospital ensures a robust support system that significantly enhances patient education, convenience, and adherence continuity—key components for sustained lifestyle transformation and long-term success in managing chronic diseases.

A Call for Medical Paradigm Shift

Despite growing evidence, many medical professionals still favour pharmaceutical interventions over nutritional therapy [25-29]. This inertia perpetuates a reactive healthcare model, which increases costs and reduces patient autonomy. The integration of Semaglutide and WFPBD represents a path forward: utilise medications, when necessary, but focus on empowering patients to heal through lifestyle transformation.

Economic and Societal Implications

Adopting WFPBD as a national health strategy would [30-34]:

- Lower Healthcare Expenditures: Reduced need for chronic medication.
- Improve Workforce Productivity: Healthier populations miss fewer workdays.
- Elevate Public Health: Through community nutrition programs and AI-driven education.

Conclusion

The integration of Semaglutide with a WFPBD represents a significant advancement in chronic disease management,

Mulijono D., Cardiol Cardiovasc Med 2025
DOI:10.26502/fccm.92920463

offering a highly effective and sustainable approach to reversing cardiometabolic disorders. While Semaglutide provides immediate pharmacological benefits in weight reduction, glycaemic control, and cardiovascular protection, its effects are primarily temporary without continued use. In contrast, WFPBD offers enduring, side-effect-free metabolic restoration through nutritional excellence, addressing root causes of disease such as inflammation, oxidative stress, insulin resistance, and endothelial dysfunction. Enhanced by cutting-edge AI technologies, this combined therapeutic strategy facilitates initial dietary adherence and ensures sustained patient engagement, behavioural transformation, and optimal long-term outcomes. Ultimately, the synergy between Semaglutide, WFPBD, and AI integration heralds a paradigm shift from mere symptom management to comprehensive, reversible care for chronic diseases, promising profound improvements in patient health, quality of life, and public health outcomes.

Author Contributions

D.M; Conceptualization, writing, review, and editing.

Funding

This research received no external funding.

Institutional Review Board Statement

Not applicable.

Informed Consent Statement

Not applicable.

Data Availability Statement

Data are contained within the article.

Conflict of Interest

The authors declare no conflict of interest.

References

1. Petrie JR, Guzik TJ, Touyz RM. Diabetes, hypertension, and cardiovascular disease: clinical insights and vascular mechanisms. Can J Cardiol 34 (2018): 575-584.
2. van Oostrom SH, Gijsen R, Stirbu I, Korevaar JC, Schellevis FG, et al. Time trends in prevalence of chronic diseases and multimorbidity not only due to aging: data from general practices and health surveys. PLoS One 11 (2016): e0160264.
3. Hacker K. The burden of chronic disease. Mayo Clin Proc Innov Qual Outcomes 8 (2024): 112-119.
4. Kommu S, Whitfield P. Semaglutide. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2025.
5. Moiz A, Levett JY, Filion KB, Peri K, Reynier P, et al. Long-term efficacy and safety of once-weekly semaglutide for weight loss in patients without diabetes: a systematic review and meta-analysis of randomized controlled trials. Am J Cardiol 222 (2024): 121-130.
6. Chao AM, Tronieri JS, Amaro A, Wadden TA. Semaglutide for the treatment of obesity. Trends Cardiovasc Med 33 (2023): 159-166.
7. Wilding JPH, Batterham RL, Calanna S, Davies M, Van Gaal LF, et al. Once-weekly semaglutide in adults with overweight or obesity. N Engl J Med 384 (2021): 989-1002.
8. Andreasen CR, Andersen A, Knop FK, Vilsbøll T. How glucagon-like peptide 1 receptor agonists work. Endocr Connect 10 (2021): R200–R212.
9. Natale F, Luisi E, Franzese R, Mollo N, Solimene A, et al. Semaglutide in cardiometabolic diseases: SELECTing the target population. J Cardiovasc Dev Dis 11 (2024): 145.
10. Mikhail N, Wali S. Semaglutide: the first anti-obesity agent shown to decrease cardiovascular events. Ann Cardiovasc Dis 8 (2024): 1036.
11. Ussher JR, Drucker DJ. Glucagon-like peptide 1 receptor agonists: cardiovascular benefits and mechanisms of action. Nat Rev Cardiol 20 (2023): 463-474.
12. Singh S, Garg A, Tantry US, Bliden K, Gurbel PA, et al. Safety and efficacy of glucagon-like peptide-1 receptor agonists on cardiovascular events in overweight or obese non-diabetic patients. Curr Probl Cardiol 49 (2024): 102403.
13. Ferhatbegović L, Mršić D, Macić-Džanković A. The benefits of GLP-1 receptors in cardiovascular diseases. Front Clin Diabetes Healthc 4 (2023): 1293926.
14. Lincoff AM, Brown-Frandsen K, Colhoun HM, Deanfield J, Emerson SS, et al. Semaglutide and cardiovascular outcomes in obesity without diabetes. N Engl J Med 389 (2023): 2221-2232.
15. Kosiborod MN, Bhatta M, Davies M, Deanfield JE, Garvey WT, et al. Semaglutide improves cardiometabolic risk factors in adults with overweight or obesity: STEP 1 and 4 exploratory analyses. Diabetes Obes Metab 25 (2023): 468-478.
16. Le R, Nguyen MT, Allahwala MA, Psaltis JP, Marathe CS, et al. Cardiovascular protective properties of GLP-1 receptor agonists: more than just diabetic and weight loss drugs. J Clin Med 13 (2024): 4674.
17. Collins L, Costello RA. Glucagon-like peptide-1 receptor agonists. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2025.
18. Clark L. GLP-1 receptor agonists: a review of glycemic benefits and beyond. JAAPA 37 (2024): 1-4.

Mulijono D., Cardiol Cardiovasc Med 2025
DOI:10.26502/fccm.92920463

19. Popoviciu MS, Păduraru L, Yahya G, Metwally K, Cavalu S. Emerging role of GLP-1 agonists in obesity: a comprehensive review of randomised controlled trials. Int J Mol Sci 24 (2023): 10449.

20. Nauck MA, Quast DR, Wefers J, Meier JJ. GLP-1 receptor agonists in the treatment of type 2 diabetes: state of the art. Mol Metab 46 (2021): 101102.

21. Yuan L, Jiang Q, Zhai Y, Zhao Z, Liu Y, et al. Association between plant-based diet and risk of chronic diseases and all-cause mortality in centenarians in China: a cohort study. Curr Dev Nutr 8 (2023): 102065.

22. Katz DL. Plant-based diets for reversing disease and saving the planet: past, present, and future. Adv Nutr 10 (2019): S304-S307.

23. Peña-Jorquera H, Cid-Jofré V, Landaeta-Díaz L, Petermann-Rocha F, Martorell M, et al. Plant-based nutrition: exploring health benefits for atherosclerosis, chronic diseases, and metabolic syndrome—a comprehensive review. Nutrients 15 (2023): 3244.

24. Vega-Cabello V, Al Hinai M, Yévenes-Briones H, Caballero FF, Lopez-García E, et al. Plant-based diets and risk of multimorbidity: the health and retirement study. J Nutr 154 (2024): 2264-2272.

25. Viroli G, Kalmpourtzidou A, Cena H. Exploring benefits and barriers of plant-based diets: health, environmental impact, food accessibility and acceptability. Nutrients 15 (2023): 4723.

26. Storz MA. Is there a lack of support for whole-food, plant-based diets in the medical community? Perm J 23 (2018): 18-68.

27. Lee V, McKay T, Ardern CI. Awareness and perception of plant-based diets for the treatment and management of type 2 diabetes in a community education clinic: a pilot study. J Nutr Metab 2015 (2015): 236234.

28. Alcorta A, Porta A, Tárrega A, Alvarez MD, Vaquero MP. Foods for plant-based diets: challenges and innovations. Foods 10 (2021): 293.

29. Rickerby A, Green R. Barriers to adopting a plant-based diet in high-income countries: a systematic review. Nutrients 16 (2024): 823.

30. Schepers J, Annemans L. The potential health and economic effects of plant-based food patterns in Belgium and the United Kingdom. Nutrition 48 (2018): 24-32.

31. Gonzalgo MR, Nackeeran S, Mouzannar A, Blachman-Braun R. Socioeconomic differences associated with consumption of a plant-based diet: results from the national health and nutrition examination survey. Nutr Health 30 (2024): 253-259.

32. Mason-D'Croz D, Barnhill A, Bernstein J, Bogard J, Dennis G, et al. Ethical and economic implications of the adoption of novel plant-based beef substitutes in the USA: a general equilibrium modelling study. Lancet Planet Health 6 (2022): e658-e669.

33. Key TJ, Papier K, Tong TYN. Plant-based diets and long-term health: findings from the EPIC-Oxford study. Proc Nutr Soc 81 (2022): 190-198.

34. Gibbs J, Cappuccio FP. Plant-based dietary patterns for human and planetary health. Nutrients 14 (2022): 1614.

Citation: Dasaad Mulijono. The Perfect Combination: Semaglutide and Whole-Food Plant-Based Diet in Chronic Disease Care. Cardiology and Cardiovascular Medicine. 9 (2025): 398-403.