

PERCEPTIONS OF OLMESARTAN AND AMLODIPINE COMBINATION THERAPY IN THE MANAGEMENT OF HYPERTENSION

Dissertation Defence



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Research Question

What are the perceptions and experiences of customers when managing hypertension through combination therapy of Olmesartan and Amlodipine?

Objective of the project



To assess physicians' perceptions while prescribing Olmesartan and Amlodipine combination therapy in hypertension management.



To identify factors influencing patient adherence to the prescribed regimen.



To explore patient-reported outcomes and satisfaction levels with the combination therapy.



To compare patient perspectives on Olmesartan and Amlodipine combination therapy with other antihypertensive treatments.

Introduction



Hypertension

- Hypertension, commonly known as high blood pressure, is a prevalent health condition that affects a significant portion of the global population.
- Hypertension is known as the blood pressure above the normal levels. There are two measures of blood pressure systolic and diastolic blood pressure. The force that a person's blood exerts against their blood vessel walls is known as blood pressure. The blood vascular resistance and the heart's exerted effort determine this pressure. The pressure in the arteries during a heartbeat is known as diastolic blood pressure, whereas the pressure in the arteries during a heart rest is known as systolic blood pressure. A normal blood pressure reading is defined as 120/80 mm Hg, meaning that the normal systolic blood pressure is less than 120 mm Hg, and the normal diastolic blood pressure is less than 80 mm Hg.

Prevalence of Hypertension

- An estimated 1.28 billion adults aged 30–79 years worldwide have hypertension, with the majority (two-thirds) residing in low- and middle-income countries.
- Surprisingly, 46% of adults with hypertension are unaware that they have the condition, highlighting the need for increased awareness and regular blood pressure monitoring.
- Less than half of adults (42%) diagnosed with hypertension receive appropriate treatment, emphasizing the importance of early detection and intervention.
- In India, only about 12% of hypertensive individuals have controlled blood pressure. One-third of all deaths in India are attributable to cardiovascular illnesses (CVDs), which include heart attacks and strokes, and uncontrolled blood pressure is one of the major risk factors for these conditions. Nationally, more than 1 in 4 people have hypertension, and cumulatively, more than 90% of adults with hypertension are either undiagnosed, untreated, or treated but with uncontrolled hypertension (World Health Organization: WHO, 2020; Varghese et al., 2023) 51.8 percent of individuals surveyed in Punjab were found to have hypertension, whereas the prevalence stood at 24.3 percent in Meghalaya.

Symptoms

- Most individuals with hypertension do not typically exhibit noticeable symptoms. However, extremely elevated blood pressure levels can lead to symptoms such as severe headaches, blurred vision, chest pain, and various other manifestations.
- Regular blood pressure monitoring is essential to detect hypertension, as it often presents without obvious signs. Left untreated, hypertension can contribute to the development of serious health conditions like kidney disease, heart disease, and stroke.
- Individuals with very high blood pressure, typically measured at 180/120 or higher, may encounter symptoms such as severe headaches, chest pain, dizziness, breathing difficulties, nausea, vomiting, changes in vision, anxiety, confusion, ringing in the ears, nosebleeds, and irregular heartbeats. (World Health Organization)

Treatment approach for hypertension

CLASS	DISCOVERED IN	EFFECT	ADVERSE EVENTS
ACE Inhibitors	1975	PVR, BV	Angioedema, Dry cough
Beta Blockers	1960	HR, BV	Fatigue, dizziness, in some patient- sexual dysfunction and erectile dysfunction.
Calcium Channel Blockers	1960	PVR	Non-dihydropyridines-Constipation, worsening cardiac output, bradycardia. Dihydropyridines - light-headedness, flushing, headaches, peripheral edema.
Diuretics	1950	BV	Hypovolemia
ARB	1995	PVR, BV	Well tolerated and low incidence of side effects

Combination therapy of hypertension

- Combination therapy presents many advantages compared to using large doses of a single agent and in some situations fixed-dose combinations have advantages over using each drug separately. The potential advantages include greater efficacy, improved response rates, better tolerability, favourable alteration in pharmacokinetics, improved compliance, and a possibly lower cost. The efficacy of the combination of two medications in lower doses is usually greater than blood pressure lowering effects of either agent at higher doses.
1. **ACE Inhibitors or ARBs with Thiazide Diuretics**
 2. **ACE Inhibitors or ARBs with Calcium Channel Blockers (CCBs):**
 3. **Beta-Blockers with Diuretics**
 4. **Triple Therapy:**

Olmesartan

Class: Angiotensin II Receptor Blocker (ARB)

- **Mechanism of Action:** Olmesartan selectively inhibits the binding of angiotensin II to the AT1 receptor in vascular smooth muscle. Angiotensin II is a potent vasoconstrictor that also stimulates aldosterone secretion, leading to sodium and water retention. By blocking the AT1 receptor, olmesartan prevents vasoconstriction and promotes vasodilation, reducing blood pressure. Additionally, it decreases aldosterone secretion, leading to reduced sodium and water retention, which further helps in lowering blood pressure
- **Pharmacokinetics:**
 - a) **Absorption:** Olmesartan is rapidly absorbed from the gastrointestinal tract, with an absolute bioavailability of about 26%.
 - b) **Distribution:** It is extensively bound to plasma proteins (99%) and has a volume of distribution of 17 L.
 - c) **Metabolism:** Olmesartan is not extensively metabolized, with about 40% excreted unchanged in the urine.
 - d) **Elimination:** The half-life of olmesartan is approximately 13 hours, allowing for once-daily dosing.

Amlodipine

- **Class:** Calcium Channel Blocker (CCB)
- **Mechanism of Action:** Amlodipine inhibits the influx of calcium ions into vascular smooth muscle and cardiac muscle cells by blocking L-type calcium channels. This inhibition leads to relaxation of vascular smooth muscle (vasodilation) and reduced peripheral vascular resistance, which lowers blood pressure. In the heart, amlodipine decreases myocardial contractility and slows down the heart rate, contributing to its antihypertensive effects.

Pharmacokinetics:

- a) Absorption:** Amlodipine is well absorbed with a bioavailability of 64-90%.
- b) Distribution:** It is highly protein-bound (93%) and has a large volume of distribution (21 L/kg).
- c) Metabolism:** Amlodipine is extensively metabolized in the liver to inactive metabolites.
- d) Elimination:** The half-life of amlodipine is about 30-50 hours, which supports once-daily dosing.

Methodology





Setting: Jaipur, Rajasthan



Duration of study:
Approximately 2 months
(18/03/2024 to
30/05/2024)



Sample size: 181 Doctors.



Sampling technique:
Convenience sampling

Survey Questions

Name of the Doctor: -	
Qualification: -	State: - Rajasthan
Speciality: -	Region: -
Date: -	Contact No.: -

1. Practice setting.

- ☐ Private practice ☐ Academic institution ☐ Corporate hospital

2. What is the first-line antihypertensive treatment for stage-I essential hypertension?

- ☐ Angiotensin II receptor blockers (ARBs)
- ☐ Calcium channel blockers (CCBs)
- ☐ ARB + CCB
- ☐ ARB + Diuretics
- ☐ CCB + Diuretics
- ☐ Other (please specify)

3. What factors help you to decide between initiation of monotherapy & combination therapy?

- ☐ Blood pressure level
- ☐ Identified risk factors.
- ☐ Comorbid conditions
- ☐ All the above
- ☐ Any other (please specify)

4. What is the reason for your first choice for preference of ARB & CCB in managing hypertension?

- ☐ Efficacy
- ☐ Once daily compliance
- ☐ Pleiotropic benefits
- ☐ Cost of therapy
- ☐ Any other (please specify)

5. According to you, in which condition is the ARB + CCB combination indicated in hypertension?

- ☐ Hypertension in Nephropathy
- ☐ Diabetic hypertensive
- ☐ Hypertension with CAD
- ☐ Uncomplicated essential hypertension as first line therapy
- ☐ Any other (please specify)

6. What is your preferred combination in first-line treatment of hypertension?

- ☐ Olmesartan + Amlodipine
☐ Olmesartan + Cilnidipine
☐ Telmisartan + Amlodipine
☐ Telmisartan + Cilnidipine
☐ Any other (please specify)

7. How would you rate the efficacy? (5 being the highest & 1 being the lowest)

Olmesartan + Amlodipine	1	2	3	4	5
Telmisartan + Amlodipine	1	2	3	4	5
Telmisartan + Cilnidipine	1	2	3	4	5

8. In which type of patients do you prefer below combination therapy?

Patient type preference	Olmesartan + Amlodipine	Telmisartan + Amlodipine
Elderly patients		
Patients with diabetes		
Patients with renal impairment		
Patients with cardiovascular comorbidities		
Any other (please specify)		

9. According to you, why is Telmisartan + Amlodipine the overwhelming choice in combination therapy for hypertension?

- ☐ Efficacy & safety profile
- ☐ Cardiovascular protective effects
- ☐ Widely available
- ☐ Cost-effective
- ☐ Any other (please specify)

10. Among the factors given below rate them accordingly which influences you to make a choice of a brand? (5 being the highest priority & 1 being the lowest priority)

Efficacy	1	2	3	4	5
Quality	1	2	3	4	5
Cost Effectiveness	1	2	3	4	5
Company	1	2	3	4	5
Visit of MR	1	2	3	4	5
Marketing and educational material	1	2	3	4	5
Ease of availability	1	2	3	4	5
Availability of various strengths for dose titration	1	2	3	4	5

Signature: -

Stamp: -

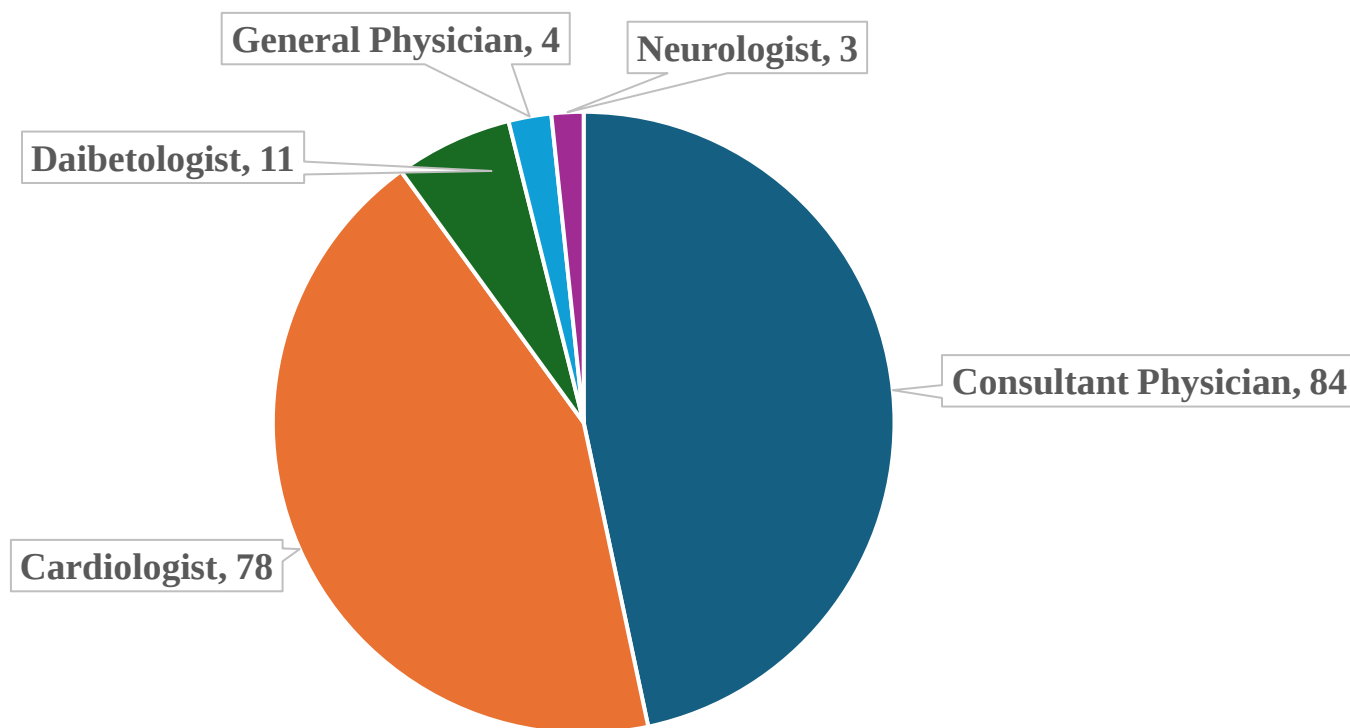
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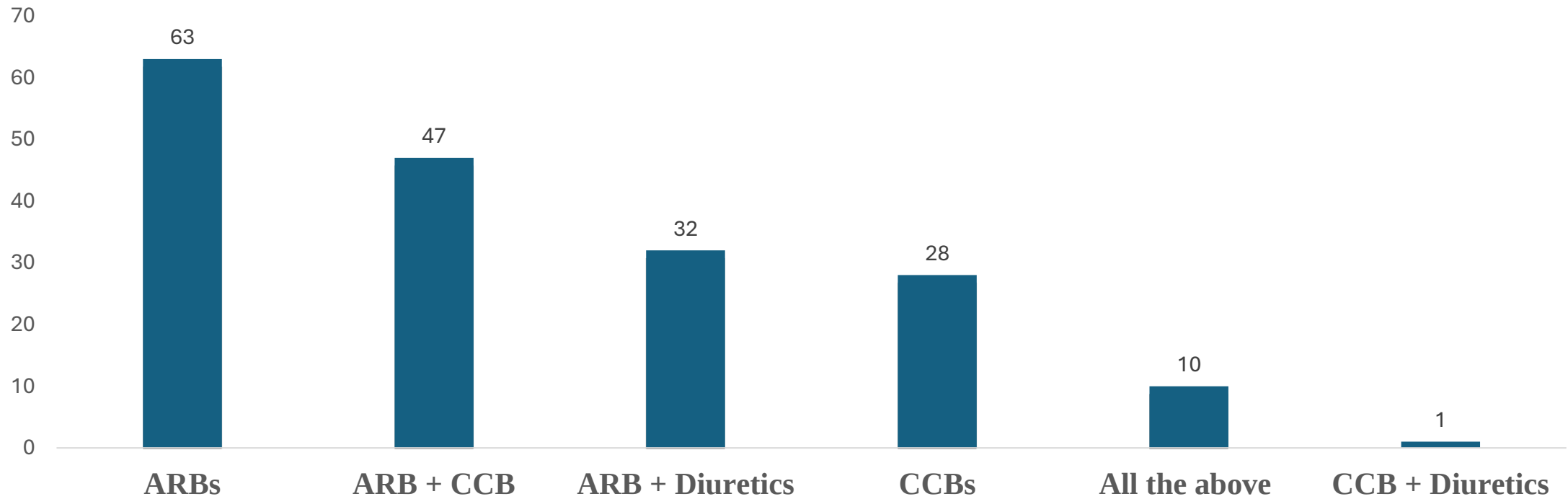
Results & Findings

Healthcare Professionals

Total Number of HCP's Engaged: 181

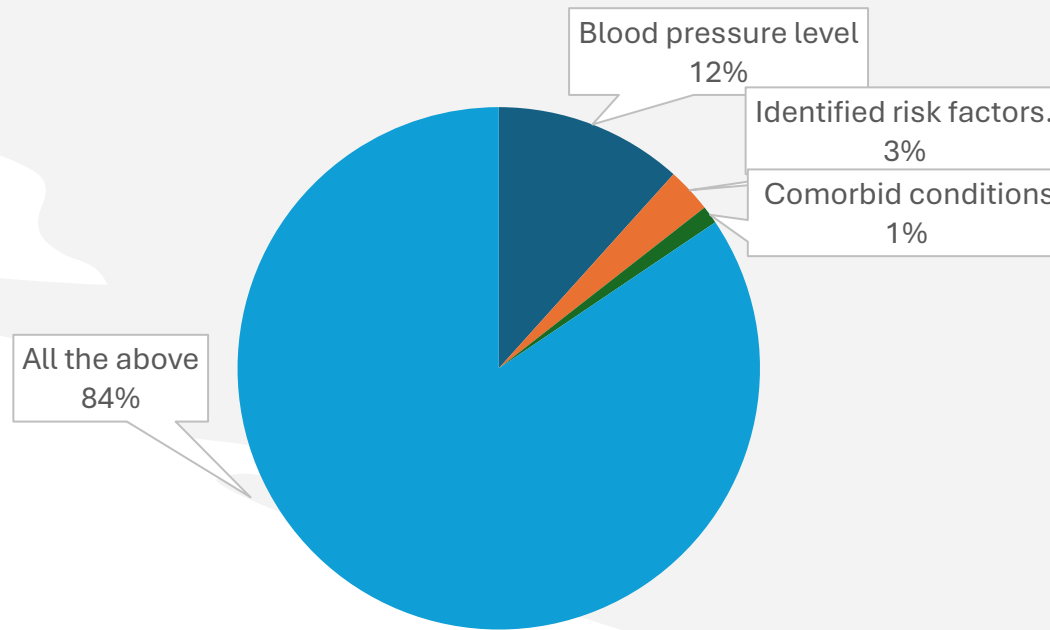


What is the first-line antihypertensive treatment for stage-I essential hypertension?



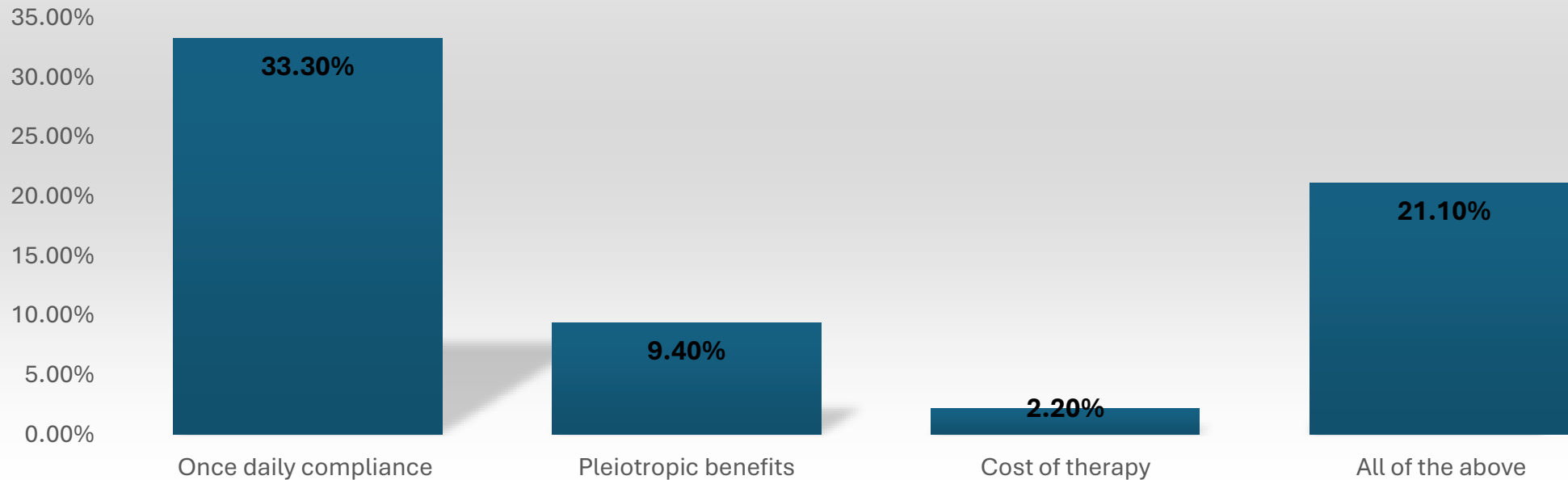
ARB & ARB+CCB is preferred as initial therapy in stage-I essential hypertension

What factors help you to decide between initiation of monotherapy & combination therapy?



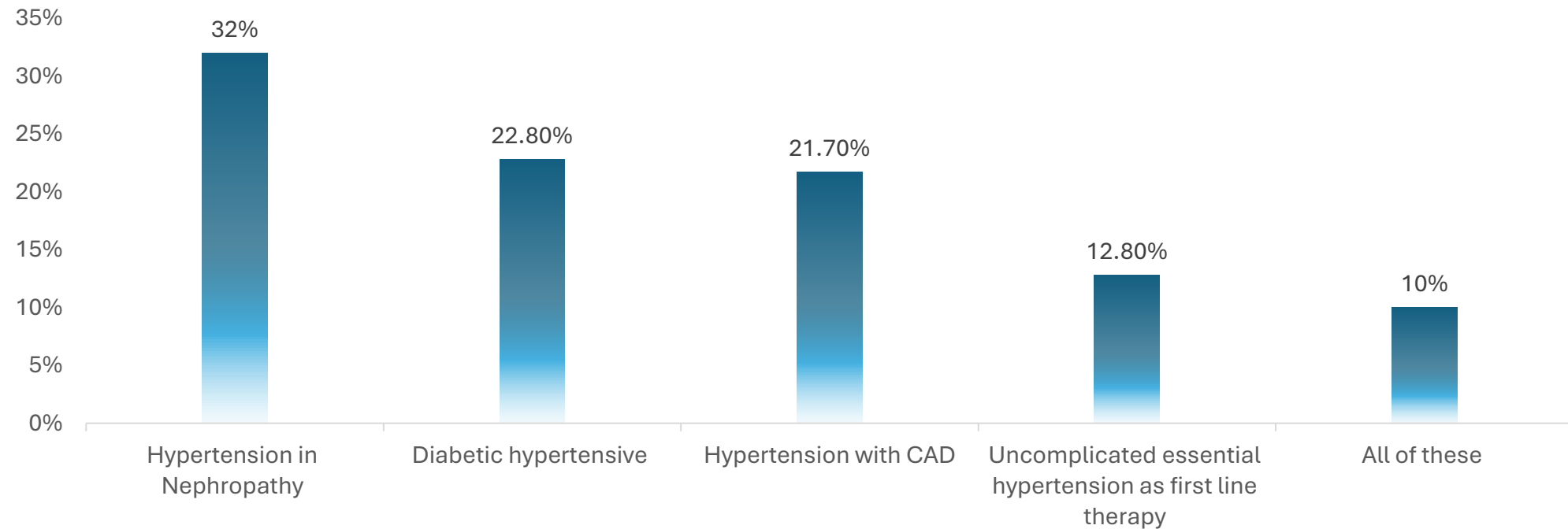
All the factors are important to decide between monotherapy & combination therapy i.e., B.P level, Identified risk factors & Comorbid conditions

What is the reason for your first choice for preference of ARB & CCB in managing hypertension?



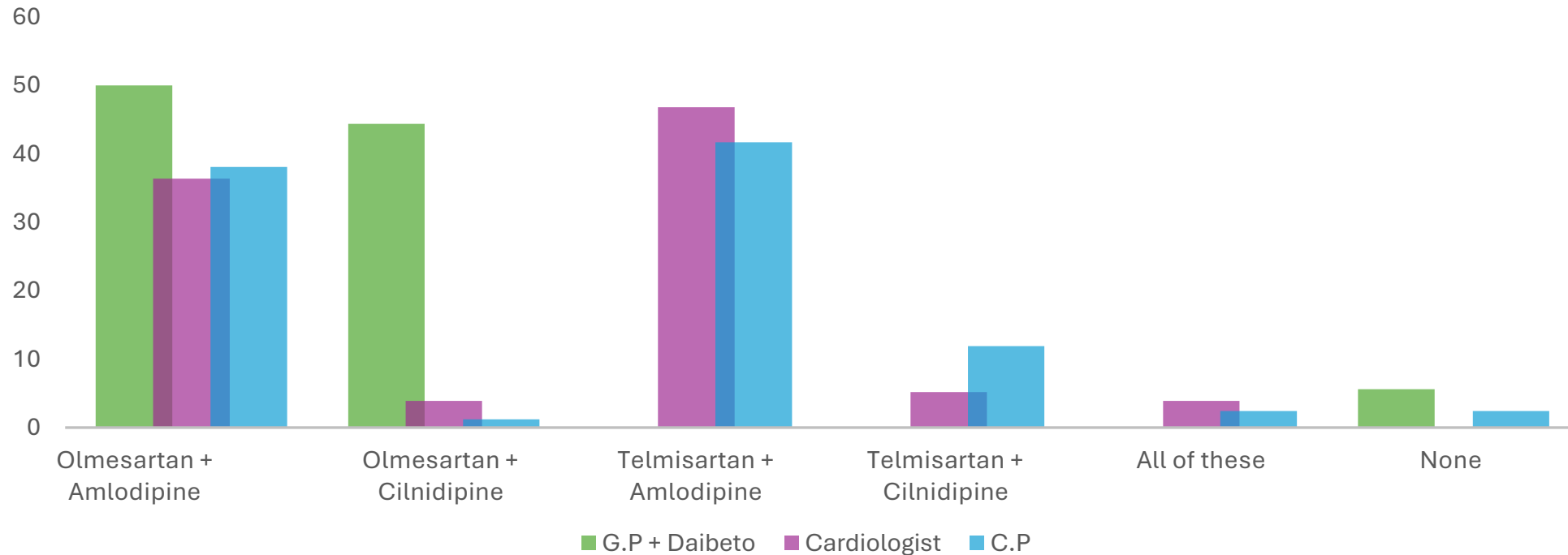
All the factors are important to decide between monotherapy & combination therapy i.e., B.P level, Identified risk factors & Comorbid conditions

According to you, in which condition is the ARB + CCB combination indicated in hypertension?



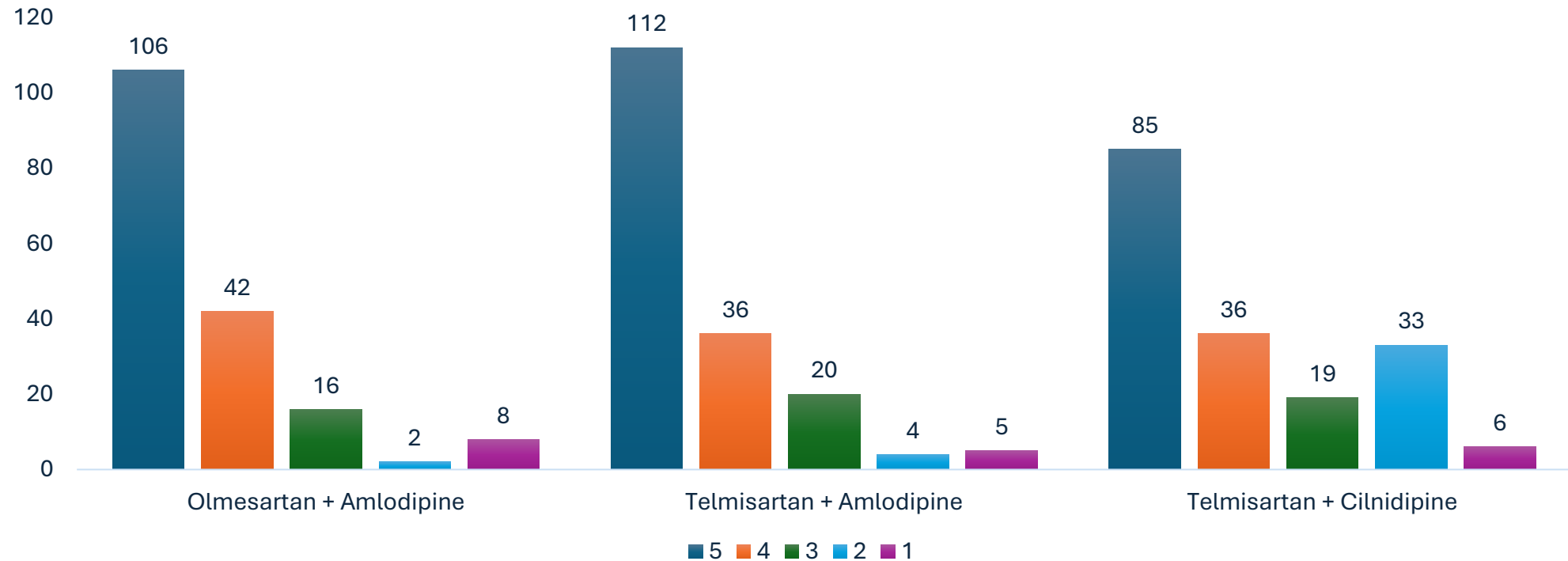
Hypertension in Nephropathy is the condition where most of the HCPs preferred ARB+CCB

What is your preferred combination in first-line treatment of hypertension?



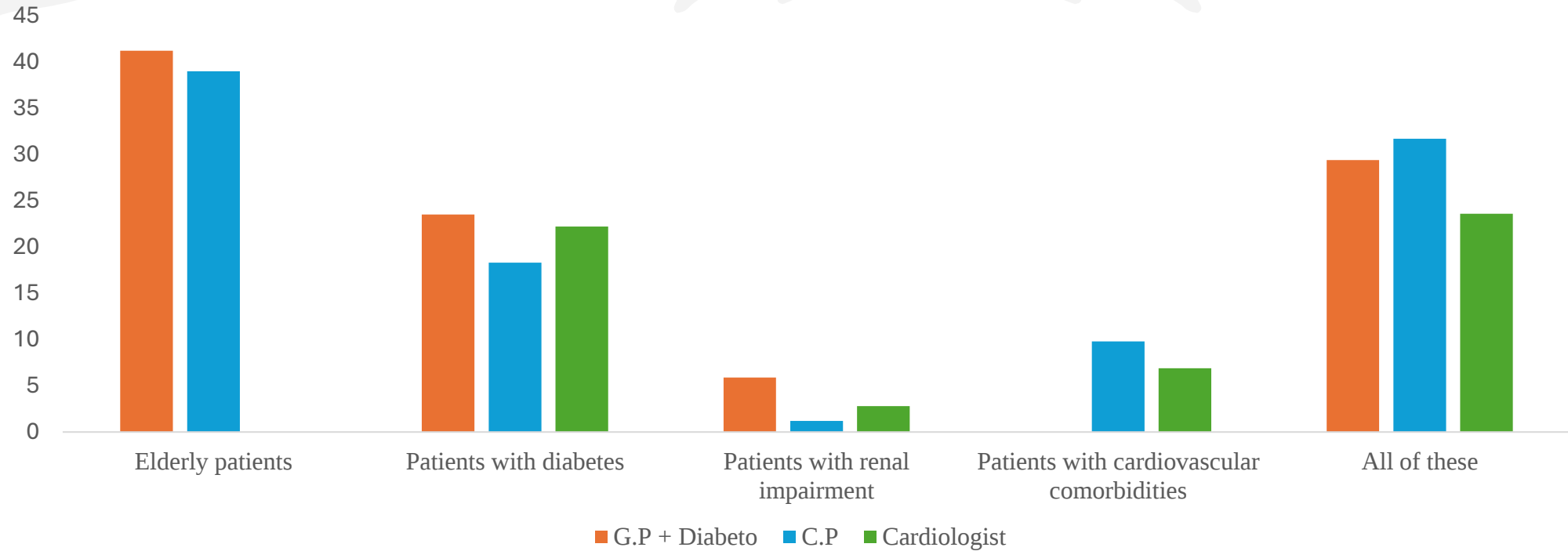
Most of the G.Ps prescribe O + A but Cardiologist prescribes T+A in first line treatment

How would you rate the efficacy? (5 being the highest & 1 being the lowest)



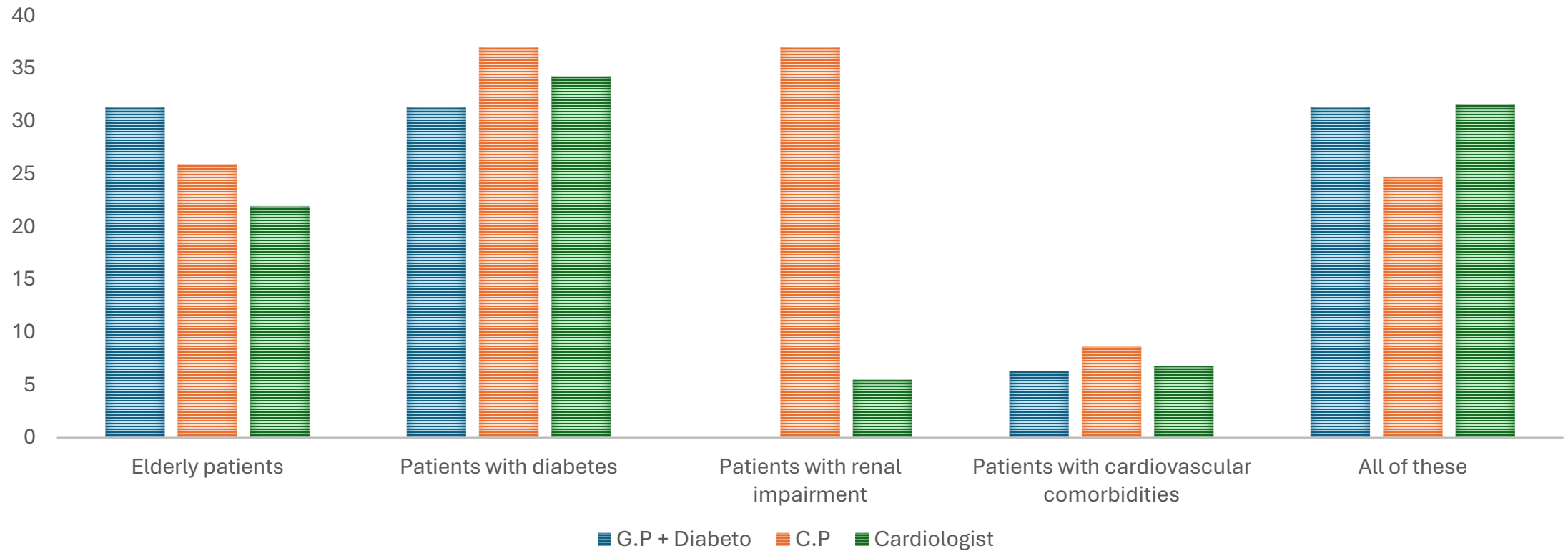
Most of the HCPs were agreed that the molecules are highly effective

In which type of patients do you prefer Olmesartan + Amlodipine combination therapy?



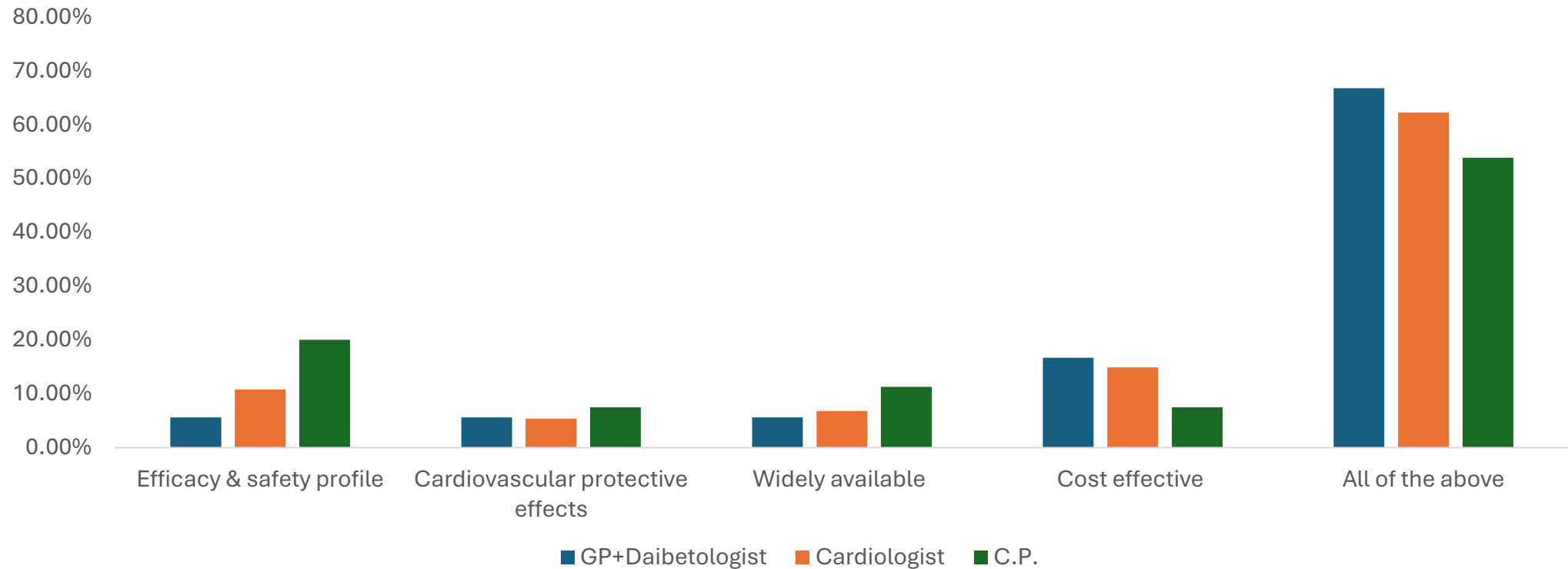
Olmesartan + Amlodipine is preferred in elderly patients along with diabetes patients

In which type of patients do you prefer Telmisartan + Amlodipine combination therapy?



Telmisartan + Amlodipine is preferred in elderly patients along with diabetes patients & also patient with renal impairment

According to you, why is Telmisartan + Amlodipine the overwhelming choice in combination therapy for hypertension?



Most of the HCPs prescribes Telmisartan + Amlodipine combination, reason was found that it is effective and safest, it provides CV protective effect, widely available and its cost is less as compared to other therapy



Recommendation

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1. Highlight the unique benefits and advantages offered by Olmesartan in comparison to Telmisartan. Provide detailed explanations and evidence supporting Olmesartan's superiority in efficacy and other relevant factors. This approach aims to differentiate Olmesartan and position it as the preferred choice among healthcare professionals when compared to Telmisartan.
 2. Highlight the unique benefits and advantages offered by Amlodipine in comparison to other CCBs used in market
 3. Increase the noise level of the combination therapy
 4. Provide comprehensive education programs for healthcare professionals, focusing on the unique advantages of Olmesartan and Amlodipine in specific patient populations and clinical scenarios.

5. Engage key opinion leaders in the field of hypertension management to advocate for the increased use of combination drugs through speaking engagements, opinion pieces, and peer-to-peer interactions.

6. As majority of HCP's prescribe Olmesartan and Amlodipine in younger patients, patient education leaflets with QR code which will have a tracker of daily exercise and food intake also which will have an alarming system if any exercise is missed for younger patients for managing hypertension can be provided. (Patient centric approach) Punchline: **“Track to Keep Your BP on Track”**

7. OLMESAR: A RAY OF **H**- Higher BP reduction **O**- Optimum BP Control/ Organ Damage Protection **P**- Pleotropic Benefits **E**- Extended Morning BP control FOR THE HYPERTENSIVES

8. A Campaign Targeted towards doctors for treatment of elderly with Olmesartan and Amlodipine can be designed for focus on use of Olmesartan and Amlodipine for the elderly patients



Conclusion

The combination therapy of Olmesartan and Amlodipine stands out as a superior choice for hypertension management, due to its enhanced efficacy, faster onset of action, and greater potency. The strong preference among healthcare professionals, particularly for younger patients, underscores its potential as a cornerstone treatment. By promoting educational initiatives and engaging key opinion leaders, the utilization of this combination therapy can be significantly amplified. This will ultimately lead to improved patient outcomes, reduced cardiovascular risks, and a paradigm shift towards more effective hypertension management strategies.



THANK you