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An insight on market trend and prescribing patterns of antihypertensive drugs in Gujarat

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ABSTRACT: Hypertension, an elevation in blood pressure, is one of the most important risk factors for mortality and morbidity due to cardiovascular disease. In South Asia, Hypertension is estimated to be the third leading cause of death and disability. The Joint National Committee guidelines recommend Thiazide diuretics to be prescribed alone or as part of combination therapy with Calcium Channel Blockers and Angiotensin Converting Enzyme Inhibitors despite beta blockers in reducing morbidity and mortality in HTN. The present study was conducted to perform a systematic review and meta-analysis to arrive at pooled estimates for region-wise prevalence of HTN among rural and urban parts of Gujarat (Gandhinagar and Ahmedabad); and awareness, treatment, and control of BP among Indian patients suffering from HTN. Also to establish the drug prescribing trend of anti-hypertensive agents in hypertensive and highlights the present prescribing practice of physicians and help in improving the patient health care further.

Keywords:- Hypertension, World Health Organisation, cardiovascular disease, Calcium Channel Blockers (CCBs), Angiotensin Converting Enzyme Inhibitors (ACEIs).

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Introduction

Non-communicable diseases (NCDs) are a leading cause of mortality worldwide and disproportionately affect low and middle income countries. According to the World Health Organisation (WHO), NCDs account for 71% of all deaths globally, and 77% of these deaths occur in low and middle income countries [1]. Cardiovascular disease (CVD) is the single largest contributor with over 44% of all NCD deaths [1]. Hypertension (HTN) is one of the commonest NCD, and a major public health concern accounting for 19% of all NCD deaths globally [1]. Hypertension, or prolonged and persistent elevation in blood pressure, is one of the most important risk factors for mortality and morbidity due to cardiovascular disease. An estimated one billion people are affected by hypertension worldwide and the condition accounts for more than half of the 17 million deaths caused by cardiovascular disease each year. Approximately 5% of hypertensive patients have an underlying cause (for example, kidney disease) for their disease, but the vast majority are diagnosed with 'essential hypertension' with unknown aetiology. [2]

Another underlying causes of HTN is an extremely common comorbid condition in diabetes, affecting nearly 20-60% of patients with diabetes, depending on obesity, ethnicity, and age. HTN substantially increases the risk of both macro vascular and microvascular complications, including stroke, coronary artery disease, and peripheral vascular disease, retinopathy, nephropathy, and possibly neuropathy. [3] As HTN is a disease of complex etiology, affecting 972 million people worldwide. Prevalence of HTN in India is reported to vary from 4 to 15% in urban and 2-8% in rural population. It is estimated that the worldwide prevalence of HTN would increase from 26.4% in 2000 to 29.2% in 2025. [4] In South Asia, HTN is estimated to be the third leading cause of death and disability, after household air pollution and tobacco smoking [5]. India has a high burden of hypertension. While the private sector provides 70% of outpatient care in the country. [6] In addition, it is an independent risk factor for coronary heart disease; the asymptomatic nature

of HTN contributes to a lack of awareness of this condition, thus being labelled a "silent killer disease." If undiagnosed or uncontrolled, HTN can significantly contribute to unnecessary death and disability due to coronary heart disease. Hence, it is crucial that the basic principle of levels of prevention in public health is adhered to, including early diagnosis and prompt treatment. High blood pressure (BP) is ranked as the third most important risk factor for attributable burden of disease in south Asia [5]. Hypertension (HTN) exerts a substantial public health burden on cardiovascular health status and healthcare systems in India. [7] HTN is directly responsible for 57% of all stroke deaths and 24% of all coronary heart disease (CHD) deaths in India. [8] An alarming rise in HTN projected by Global Burden of Hypertension 2005 study, [9] the GBD 2010 study [5] and WHO 2011 NCD India specific data [10] portray a grim picture for the 17.8% of the world's population who reside in India. Previously, a systematic review on the prevalence of HTN in India, for studies published between 1969 and July 2011, reported a range between 13.9 to 46.3% and 4.5 to 58.8% in urban and rural areas of India, respectively [11]. The regional variations (between urban and rural) reported in prevalence of HTN are also seen in cardiovascular diseases. Published literature reports regional variations in mortality and prevalence of CHD and stroke in India (south India has higher CHD mortality and eastern India has higher stroke rates [12]). Similar variations are also seen among urban and rural areas with CHD prevalence being higher in urban parts of India [12] Antihypertensive pharmacotherapy effectively reduces hypertension-related morbidity and mortality. [13] Over the past decade a range of clinical guidelines on antihypertensive treatment have been published with contributions from multiple clinical trials and studies. [14] The Joint National Committee (JNC) in 2003 published a series of guidelines recommend the appropriate antihypertensive therapy based on the best available evidence. The guidelines recommend Thiazide diuretics to be prescribed alone or as part of combination therapy for most hypertensive patients without compelling indications. [15] However, most recent published data showed an increasing use of the more expensive Calcium Channel Blockers (CCBs) and Angiotensin Converting Enzyme Inhibitors (ACEIs) despite the lack of evidence to support that they are superior to diuretics and beta blockers in reducing morbidity and mortality of cardiovascular diseases [16] Despite broad dissemination of the JNC guidelines, prescribing practices have long remained discrepant with recommendations [17] The Indian hypertension drug market grew at a compound annual growth rate (CAGR) of 6.9% from 2016 to 2018 with a total of 21,066 million antihypertensive pill sales in 2018 at a value of INR 87.36 billion (USD 1.28 billion).Hence, we aimed to perform a systematic review and meta-analysis to arrive at pooled estimates for region-wise prevalence of HTN in urban parts of Gujarat (Gandhinagar and Ahmedabad; and awareness, treatment, and control of BP among Indian patients suffering from HTN. Also to establish the drug prescribing trend of anti-hypertensive agents in hypertensive and highlights the present prescribing practice of physicians and help in improving the patient health care further.

Material and Methodology:

Source of data:

The source for market research involves both primary and secondary research. The following are the details of primary market research and secondary market research.

Primary data source:

The data source includes doctors and chemists and the data is carried out by self-administered questionnaire method.

- **Doctors:**

Inclusion criteria: specialists (orthopaedist), MDs (general medicine), gynaecologists and general practitioners (MBBS).

Exclusion criteria: Doctor from other specialists and doctors involved in other system of medicine (other than allopathy) were be exclude from the survey.

- **Chemists:**

Inclusion criteria: Registered at wholesale outlets, retail outlets, including hospital pharmacies.

Exclusion criteria: Pharmacists who are not registered will not be included in the survey.

Secondary data sources:

Journals like:

a). New England journal of medicine

b). British medical journal

- Pharma pulse
- Pharma biz
- Text books of pharmaceutical marketing

Method of data collection:

- Preliminary communication with doctors and chemists to get consent to participate in the survey.
- Personal interview with the doctors and chemists.

Place and period of survey:

The survey was conducted in Gujarat from 3rd February,2021 to 3rd March 2021.

Sample size:

1)Total sample size -300

2) Doctor-100 (orthopaedist, physicians, gynaecologists and general practitioners).

3) Chemists-100

4). Patients-100

Sampling technique: Convenience sampling

Data analysis method: The data obtained was analysed using Microsoft Excel and various observations were analysed to arrive at the conclusion.

Results (Data analysis): By collecting google forms from pharmacist/chemist, we came to know that mostly 1-5 hypertensive patients (33%) came to visit

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pharmacy/medical store per day followed by 6-10 patients (24%), 11-15 patients (20%), 16-20 patients (15%) and above 20 patients (8%).

Mostly Calcium channel blockers were available pharmacies/medical stores (30%) followed by diuretics (27%), beta blockers (18%), ACE Inhibitors (15%) and Angiotensin-2 receptor blockers (10%) respectively as shown in figure 4.

By collecting google forms from physicians we came to know that physicians prescribed calcium channel blockers to patient (28%) followed by diuretics (25%), beta blockers (19%), ACE Inhibitors (15%) and Angiotensin-2 receptor blockers (13%) respectively. Calcium channel blockers category is running fast in antihypertensive segment (31%) followed by Diuretics (27%), Beta blockers (18%), ACE Inhibitors (14%) and Angiotensin-2 Receptor Blockers (10%) respectively. 1-20 percent patients suffered from hypertension due to other disease (46), followed by 21-40 percent patients (33), 41-60

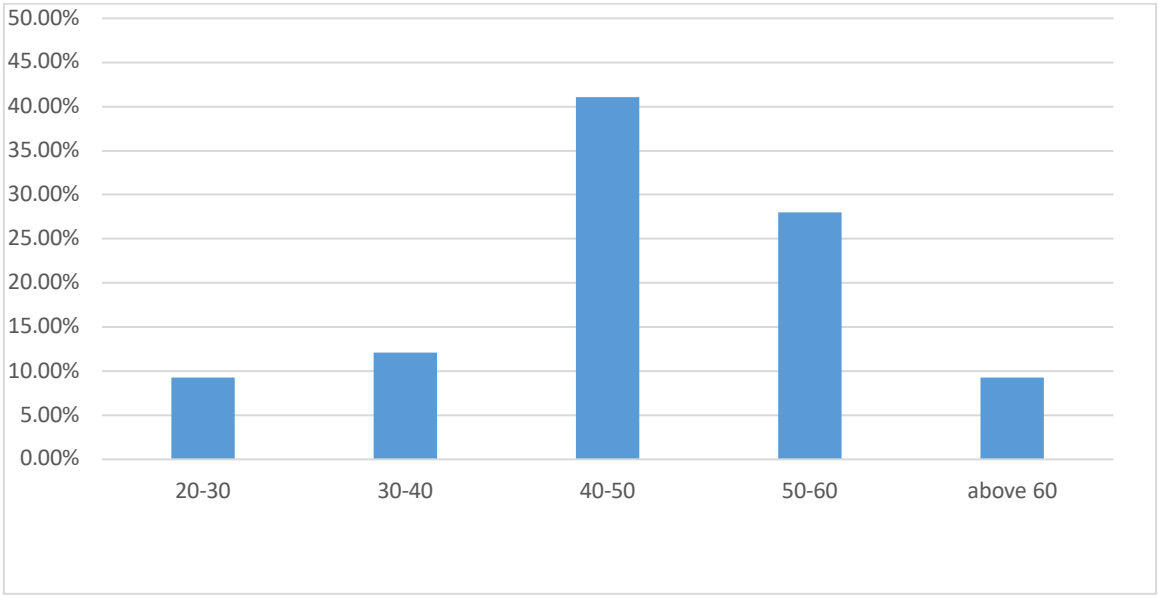

Figure 1: Age of patients suffering from hypertension

Age group between 41-50 years suffered more from hypertension (41.1%) followed by 51-60 years old (28%), 31-40 years (12.1%), above 60 (9.3%) and 21-30 years (9.3%) respectively as shown in figure 1.

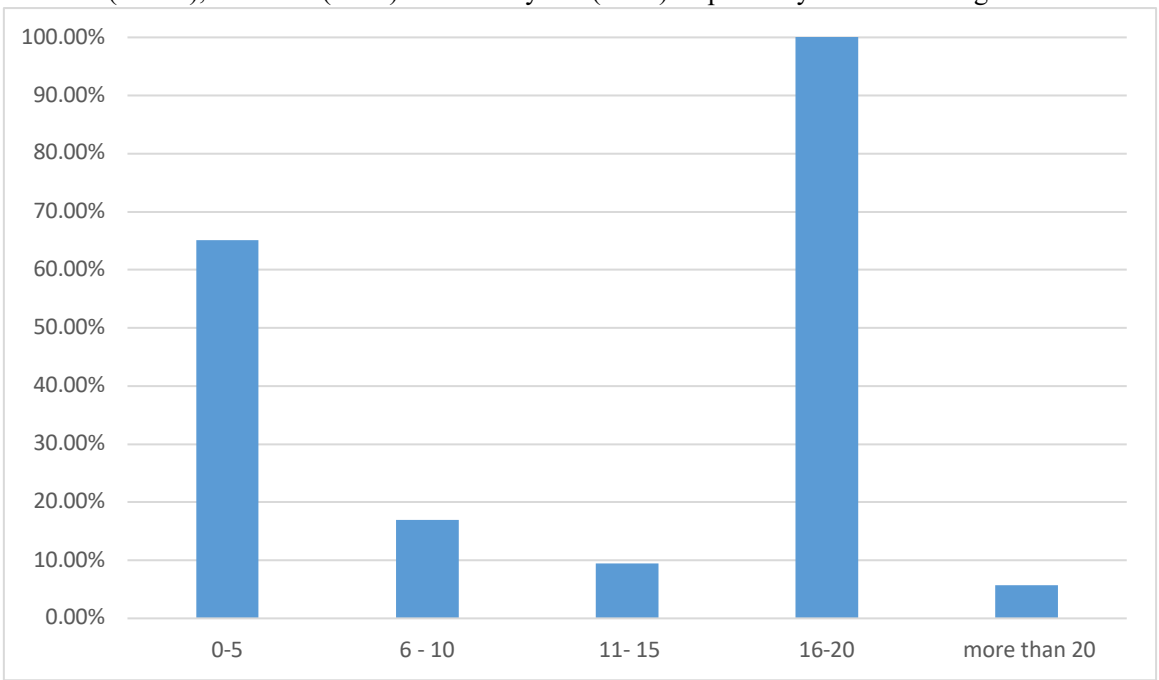

Figure 2: Brands of antihypertensive drugs

0-5 number of brands (65.1%), 6-10 number of brands (17%), 11-15 number of brands (9.4%), more than 20 brands (5.7%) of antihypertensive drug were available at medical stores/pharmacies as shown in figure 2.

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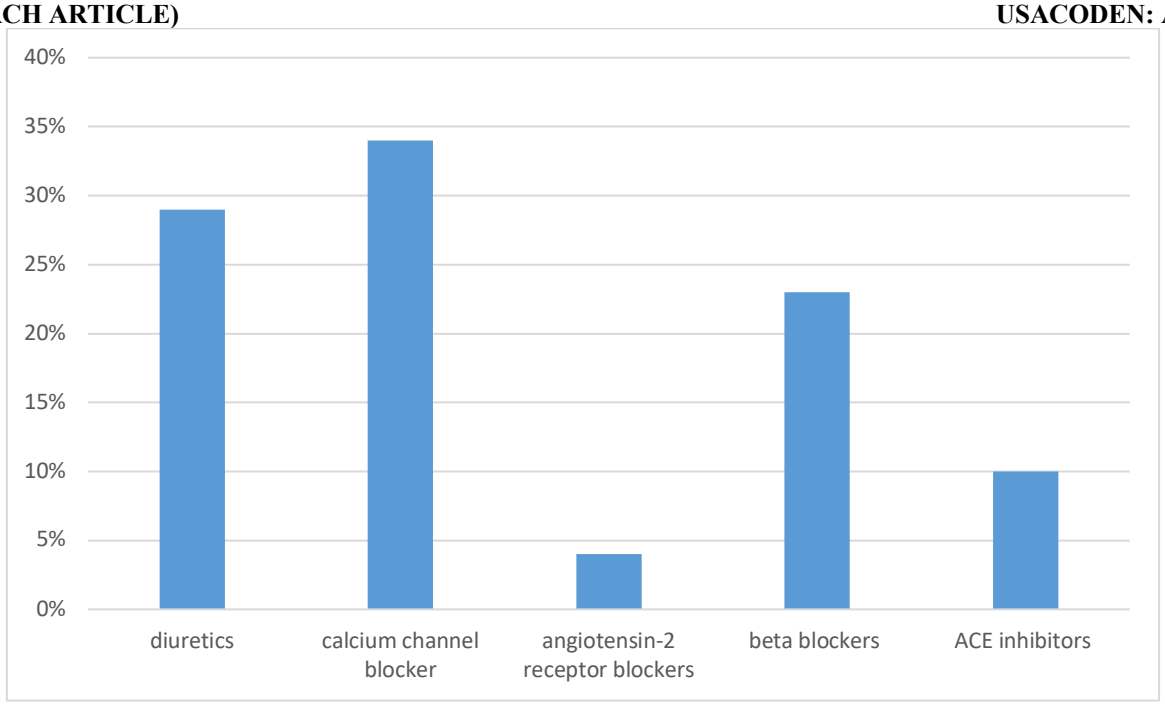

Figure 3: Types of antihypertensive used in market

Calcium channel blockers category is running fast in the market (34%) followed by Diuretics (29%), Beta blockers (23%), ACE Inhibitors (10%) and Angiotensin-2 receptor blockers (4%) respectively as shown in figure 3.

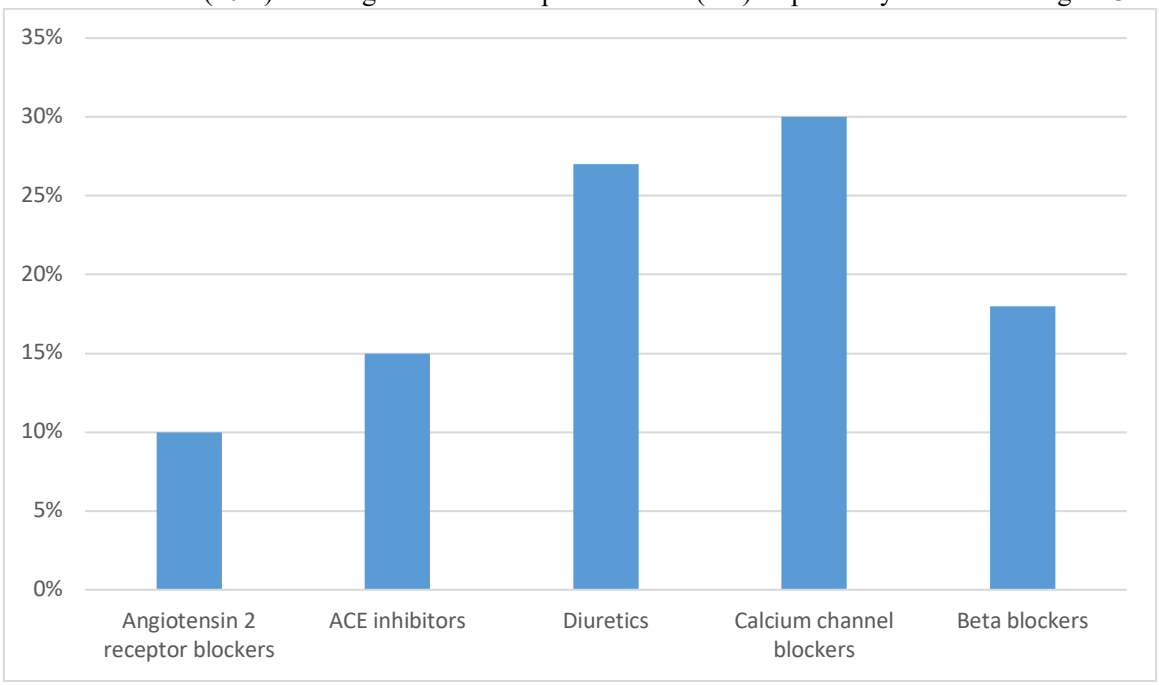

Figure 4: Availability of types of antihypertensive drugs at pharmacies/medical store

percent patients (14), 61-80 percent patients (5) and 81-100 percent patients (2) respectively. Mostly male suffered from hypertension (57%) as compared to female (42%) according to physician. By collecting google forms from patients we came to know that male patients were 54.5% and female patients were 45.5%. Patients of age group between 21-40 years (15), 41-60 years (49), 61-80 years (31) and 81-100 years (5) suffered from hypertension. Mostly patients took calcium channel blockers (29%) followed by diuretics (24%), beta blockers (20%), ACE Inhibitors (16%) and Angiotensin-2 Receptor Blockers (11%) respectively. Patients considered cost (62.5%), quality and efficacy (89.8%), brand (30.7%) and packaging (5.7%) while purchasing the product. Price of the drugs (products) were mostly in range of 51-100 Rs. (37.5%) followed by Rs.1-50 (25%), Rs.101-150 (20.5%) and Rs.151-200 (17%) respectively.

Conclusion

Through this survey it can be concluded that the physicians highly prescribe calcium channel blockers to patient followed by diuretics, beta blockers, ACE Inhibitors and least being prescribed Angiotensin-2 receptor blockers. The fastest running drug therapy in antihypertensive segment is Calcium channel blockers and slowest in trend

is Angiotensin-2 Receptor Blockers. Nearly 20% patients suffered from hypertension due to other disease. According to the survey conducted among physician, males are highly affected by hypertension compared to female.

Most of the patients took calcium channel blockers followed by diuretics, beta blockers, ACE Inhibitors and lastly Angiotensin-2 Receptor Blockers. Patients firstly focused on quality and efficacy, secondly considered cost, thirdly considered brand and lastly packaging while purchasing the product. Most of the product (drugs) ranged between Rs. 51-100.

Discussion

The WHO defines drug utilization studies as "the marketing, distribution, prescription and the use of drugs in a society, with special emphasis on the resulting medical, social and economic consequences." Prescription pattern surveys are an important methodological device of drug utilization studies, which help provide an in-depth insight into the disease profile of patients and prescribing behaviour of physician. In our study, the prevalence of hypertension was seen more in males compared to females with patients above 50 years of age. Gender-based differences in pattern of antihypertensive use were not significant. The management of hypertension is evolving. Whilst utilising existing antihypertensive agents more effectively may offer benefit, Recent national and international guidelines recommend CCBs, ARBs, ACEI, or diuretics for first-line treatment of uncomplicated hypertension. Our survey also reveals that calcium channel blockers and diuretics were prescribed by physician. The use of antihypertensive drugs is increased worldwide. Hypertension treatment strategy varies widely in terms of initial drug of choice from diuretic to ACEIs/ ARBs/ CCBs and from monotherapy to combination therapy. Propagation and uptake of standardised hypertension guidelines in the public and private sector can improve the quality of hypertension care and help consolidate the market, leading to lower prices of recommended drugs. In July 2019, the World Health Organization (WHO) included SPCs for hypertension management in its EML. The prices of SPCs under the Government of India's flagship generic drug scheme are lower than prices of the individual components. [18]

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