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Original Research Article

A study on prescribing pattern of medications for chronic disorders in community setting

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ABSTRACT

Background: Non-communicable diseases (NCDs) or chronic disorders are preventable and costly conditions which are a leading cause of mortality worldwide. Monitoring and evaluating prescribing patterns provide crucial insights into current medication trends, usage, and emerging practices, informing necessary modifications.
Methods: This was a prospective cross-sectional observational study conducted over six months in community pharmacies in Mysuru. Patients diagnosed with chronic disorders who visited community pharmacies and who met the study criteria were enrolled. Data was collected from prescriptions, patient/caretaker interviews, medical records, and medication strips. Disorders were classified using ICD-10, and drugs were classified based on ATC classification to assess prescribing patterns.
Results: A total of 511 patients were enrolled, with a mean age of 56.4 years and a male predominance. Diseases of the circulatory system were the most common, followed by endocrine, nutritional, and metabolic diseases. Cardiovascular system drugs were most frequently prescribed, followed by those for the alimentary tract and metabolism. The most common comorbidity was T2DM with HTN.
Conclusions: Prescribing patterns for chronic diseases vary across regions in south India. In chronic disorders, where patients are on lifelong medication, patient adherence, counselling on potential side effects and correct medication usage are essential. This study highlighted the need for continuous monitoring of prescribing practices to ensure optimal patient outcomes and rational drug use in community settings.

Keywords: Chronic disorders, Community setting, Drug utilization, Prescribing pattern

INTRODUCTION

Chronic diseases, also known as non-communicable diseases (NCDs), are defined as long term conditions that progress slowly and often require prolonged treatment and care. Globally, NCDs account for approximately 75% of all deaths, claiming the lives of 43 million people annually, of which 18 million are premature deaths before the age of 70 years.[1] In India, NCDs are responsible for an estimated 63% of total deaths, with cardiovascular diseases (CVDs), diabetes mellitus (DM), chronic respiratory diseases, and cancers being the major contributors.[2]

The increasing burden of chronic diseases in developing countries is associated with aging populations, urbanization, sedentary lifestyles, and dietary transitions.[3] Moreover, comorbidities such as hypertension, dyslipidaemia, and diabetes frequently coexist, necessitating complex therapeutic regimens and leading to polypharmacy, which increases the risk of drug-related problems (DRPs).[4,5] DRPs, including inappropriate drug selection, drug interactions, and medication non-adherence, are prevalent among chronic disease patients and may significantly impact clinical outcomes.[6]

Prescribing pattern studies play a critical role in understanding current therapeutic practices, evaluating adherence to clinical guidelines, and promoting rational drug use.[7] They are particularly important in community settings, where pharmacists are the most accessible healthcare professionals and can play a vital role in identifying DRPs and improving medication safety.[8,9]

Despite extensive research in hospital settings, limited data exist on prescribing practices in community pharmacies in India. Evaluating prescribing trends, DRP prevalence, and associated medication costs in real-world community settings is essential to improve patient safety and ensure optimal use of healthcare resources.[10,11] This study aimed to assess the prescribing patterns of medications for chronic disorders in a community setting, thereby contributing to improved pharmaceutical care and rational prescribing.

METHODS

Study design and study populations

A prospective cross-sectional observational design was carried out in three community pharmacies (Med pharma, Sagar medicals and Kumar medicals) over a period of six months from September 2019 to February 2020. Patients aged 18 years and above, of any gender and diagnosed with chronic diseases such as hypertension, diabetes mellitus, rheumatoid arthritis, dyslipidemia and ischemic heart disease were considered eligible. Patients receiving medications other than allopathic treatments and those diagnosed with cancer were excluded from the study.

Sampling, recruitment and data collection procedures, analysis

The study employed convenience sampling, enrolling patients who visited the selected community pharmacies during the study period and met the eligibility criteria. Ethical approval was granted by the institutional human ethics committee (IHEC) of JSS Hospital, Mysuru (Approval Number: JSSCPM/IHEC/2019/026). Data collection was performed through a structured and validated data collection form designed for this study and informed consent was obtained in either English or Kannada using validated informed consent forms. Data was obtained through direct interviews with patients or their caregivers, alongside review of prescriptions and where available, medical records or medication strips. The Demographic data, diagnosis, drug details (name, dose, route, frequency, and duration), therapeutic category. Disorders were classified using the International Classification of Diseases 10th Revision (ICD-10) and medications were categorized based on the anatomical therapeutic chemical (ATC) classification. Collected data were entered into Microsoft Excel for processing. Descriptive statistics, including mean, standard deviation (SD), and percentages, were used to analyse the results.

RESULTS

Demographic details of the study population

A total of 511 patients were enrolled in the study from 3 private community pharmacies located in Mysuru over a period of 6 months. Majority patients were found between the age group of 60-69 years (28.2%) followed by the age group of 50-59 years (23.7%). The mean age of the study population was found to be 56.4 years. Among gender distribution, male participants were accountable for 56.2% followed by female participants (Table 1).

Prescription with different types of chronic disorders

A total of 511 prescriptions with chronic disorder were screened for prescribing pattern of medications followed by DRP's and direct medication costs. Among the screened prescriptions type 2 diabetes mellitus (T2DM) was the most common comorbidity (53.4%) followed by hypertension (HTN) (34.1%) (Table 1).

Table 1: Demographic details of the patients.

Characteristics	Category	Number Male	Female	Total (N)	Percentage
	18-29	11	5	16	3.1
	30-39	17	23	40	7.8
Age in years	40-49	49	61	110	21.5
	50-59	62	59	121	23.7
	60-69	91	53	144	28.2
	70-79	42	19	61	11.9
	80-89	15	4	19	3.7
Gender	Male	287			56.2
	Female	224			43.8
		No. of prescriptions (n=511)			**Percentage**
Chronic disorder	Type 2 DM	273			53.4
	Hypertension	174			34.1
	RA	34			6.7

Continued.

Characteristics	Category	Number Male	Female	Total (N)	Percentage
	IHD	8			1.6
	Type 1 DM	6			1.2
	COPD	8			1.6
	Dyslipidemia	6			0.7
	MI	1			0.2
	Asthma	1			0.2
ICD 10 Classification					
ICD 10 CLASS		**Number of Prescriptions**			**Percentage**
Diseases of the circulatory system		365			71.4
Endocrine, nutritional, metabolic diseases		340			66.5
Diseases of the musculo-skeletal system and connective tissue		39			7.6
Diseases of the respiratory system		8			1.5

Table 2: ATC Classification.

Anatomical class of drug	Drugs	ATC code	No. of drugs
A- alimentary tract and metabolism	Biguanides + sulfonylureas, metformin + glimepiride, metformin + glipizide, metformin + glibenclamide	A10BD02	147
	Metformin	A10BA02	58
	Teneligliptin	A10BH08	29
	Pantoprazole		27
	Ranitidine	A02BA02	12
	Glimepiride	A10BB12	8
	Sulfasazine	A07EC01	6
	Metformin + sitagliptin	A10BD07	5
	Short acting insulin	A10AB01	3
	Voglibose	A10BF03	2
	Metformin + linagliptin	A10BD11	2
	Nitroglycerin	C01DA02	2
	Repaglinide	A10BX02	2
	Pioglitazone + glimepiride	A10BD06	2
	Empagliflozin + linagliptin	A10BD19	2
	Pioglitazone + metformin	A10BD05	2
	Short acting insulin + long acting insulin	A10AE01	1
	Glipizide	A10BB07	1
	Metformin + vildagliptin	A10BD08	1
	Long acting insulin	A10AE06	1
	Dapagliflozin + metformin	A10BD15	1
n=314 (32.3%)			
B- blood and blood forming organs	Folic acid	B03BB01	38
	Clopidogrel	B01AC04	17
	Aspirin	B01AC06	9
	Aspirin + clopidogrel	B01AC30	7
n=71 (7.3%)			
C- cardiovascular system	Telmisartan	C09CA07	93
	Atorvastatin	C10AA05	80
	Cilnidipine	C08CA14	73
	Amlodipine	C08CA01	41
	Atorvastatin + aspirin	C10BX08	37
	Losartan	C09CA01	26
	Telmisartan + hydrochlorothiazide	C09DA07	21
	Metoprolol	C07AB02	19
	Rosuvastatin	C10AA07	14
	Nifedipine	C08CA05	7
	Ramipril	C09AA05	6

Continued.

Anatomical class of drug	Drugs	ATC code	No. of drugs
	Propranolol	C07AA05	6
	Bisoprolol	C07AB07	6
	Torsemide	C03CA04	6
	Furosemide + spironolactone	C03EB01	6
	Clonidine	C02AC01	5
	Moxonidine	C02AC05	5
	Atenolol	C07AB03	5
	Telmisartan + chlorthalidone	C09DA07	5
	Prazosin	C02CA01	4
	Carvedilol	C07AG02	4
	Isosorbide mononitrate	C01DA14	4
	Metoprolol + amlodipine	C07FB13	4
	Ramipril + amlodipine	C09BB07	3
	Olmesartan	C09CA08	3
	Rosuvastatin + fenofibrate	C10BA09	3
	Hydralazine	C02DB02	2
	Diltiazem	C08DB01	2
	Rosuvastatin + aspirin	C10BX05	2
	Furosemide	C03CA01	1
	Nicorandil	C01DX16	1
	Enalapril	C09AA02	1
	Isosorbide dinitrate	C01DA14	1
	Ramipril + hydrochlorothiazide	C09BA05	2
	Enalapril + hydrochlorothiazide	C09BA02	1
	Olmesartan + amlodipine	C09BD02	2
	Amlodipine + telmisartan	C09DB04	1
	Aspirin + atorvastatin + ramipril	C10BX06	1
n=503 (51.7%)			
J-anti infectives	Ciprofloxacin	J01MA02	1
n=1 (0.1%)			
L-anti neoplastic and immunomodulating agents	Methotrexate	L01BA01	38
n=38 (3.9%)			
M-musculoskeletal system	Aceclofenac	M02AA25	2
n=2 (0.2%)			
P-anti parasitic products, insecticides and repellents	Hydroxychloroquine	P01BA02	29
n=29 (3%)			
R- respiratory system	Formoterol + budesonide	R03AK07	5
	Salbutamol + ipratropium	R03AL02	4
	Methylprednisolone		2
	Budesonide	R03BA02	1
	Terbutaline	R03CC03	1
	Salbutamol + fluticasone	R03AK06	1
	Acetylcysteine	R05CB01	1
n=15 (1.5%)			

International classification of diseases (ICD 10)

According to international classification of diseases (ICD) our study revealed that 71.4% of prescriptions were placed under circulatory system followed by 66.5% of prescriptions that were placed under endocrine, nutritional, metabolic diseases, 7.6% of prescriptions were placed under musculoskeletal system and connective tissue diseases and 1.5% prescriptions that were placed under respiratory system (Table 1).

ATC classification

Drugs prescribed to treat cardiovascular disorders were found to be highest (51.7%) followed by alimentary tract

and metabolism (32.3%) and then blood and blood forming organs (7.3%) (Table 2).

Prescribing pattern in type 2 diabetes mellitus

Among 273 prescriptions for T2DM, 130 prescriptions were with only the diagnosis of T2DM. The most commonly prescribed combination therapy was biguanides + sulfonylureas followed by biguanides + DPP4 inhibitors and commonly prescribed monotherapy with biguanides were most commonly prescribed followed by DPP4 inhibitors i.e. teneligliptin. Based on the medical records of the patient research investigators have observed that Insulin was prescribed to the patients when glycaemic levels are not controlled by oral hypoglycaemic agents (OHAs). The average number of the drugs per prescription was found to be two drugs (Table 3).

Table 3: Prescribing pattern of T2DM.

Class of drug	Drugs	No. of drugs	No. of total drugs (n=176)	Percentage
Biguanides	T. Metformin	30	30	17
Sulfonylureas	T. Glimepiride	2	3	1.7
	T. Glipizide	1		
DPP4 Inhibitors	T. Teneligliptin	22	22	12.5
Alpha glucosidase inhibitors	T. Voglibose	2	2	1.1
Biguanides + Sulfonylureas	T. Metformin + Glimepiride	64	70	39.8
	T. Metformin + Glipizide	3		
	T. Metformin + Glibenclamide	3		
Biguanides + DPP4 Inhibitors	T. Metformin + Teneligliptin	25	28	15.9
	T. Metformin + Sitagliptin	2		
	T. Metformin + Vildagliptin	1		
Biguanides + Sulfonylureas + Alpha Glucosidase Inhibitors	T. Metformin + Glimepiride + Voglibose	5	5	2.8
Biguanides + Sulfonylureas + Thiazolidinediones	T. Metformin + Glimepiride + Pioglitazone	4	6	3.4
	T. Metformin + Glibenclamide + Pioglitazone	2		
DPP4 Inhibitors + Biguanides + Alpha Glucosidase Inhibitors	T. Teneligliptin + Metformin + Voglibose	1	1	0.6
Thiazolidinediones + Sulfonylureas	T. Pioglitazone + Glimepiride	1	1	0.6
Short Acting Insulin + Intermediate Acting Insulin	Inj. Insulin Isophane/Nph + H. Insulin 70/30	4	6	3.4
	Inj. Insulin Isophane/Nph + H. Insulin 75/25	2		
Short Acting Insulin	Inj. Actrapid	2	2	1.1

Table 4: Type 2 prescriptions of T2DM with co-morbidities.

T2 DM comorbidities	No. of prescriptions (n=143)	Percentage
HTN	95	66.4
Dyslipidemia	15	10.5
IHD	3	2.1
HTN + IHD	18	12.6
HTN + Dyslipidemia	7	4.9
HTN + MI	4	2.8
IHD + MI	1	0.7

Prescribing pattern in type 2 diabetes mellitus with co-morbidities

Among 273 prescriptions for T2DM, 143 prescriptions were of T2DM with other comorbidities. The most common comorbidities found was HTN followed by dyslipidemia and then IHD. The prescriptions which include 2 comorbidities associated with T2DM were HTN + IHD followed by HTN + dyslipidemia and then HTN + MI (Table 4).

Table 5: Prescribing pattern of T2DM with co-morbidities.

Class of drugs	Drugs	No. of drugs	No. of total drugs	Percentage
T2DM and HTN (n=239)				
Sulfonylureas	T. Gliclazide	2	5	2.1
	T. Glimepiride	3		
Biguanides	T. Metformin	19	19	7.9
DPP4 Inhibitors	T. Teneligliptin	3	3	1.3
Meglitinides	T. Repaglinide	2	2	0.8
Sulfonylureas + Biguanides	T. Glimepiride + metformin	51	54	22.6
	T. Glibenclamide + metformin	3		
Sulfonylureas + Biguanides + Alpha Glucosidase Inhibitors	T. Glimepiride + metformin + voglibose	2	2	0.8
Alpha Glucosidase Inhibitors	T. Voglibose	5	5	2.1
Alpha Glucosidase Inhibitors + Biguanides	T. Voglibose + metformin	4	4	1.7
Biguanides + DPP4 Inhibitors	T. Metformin + teneligliptin	15	19	7.9
	T. Metformin + linagliptin	4		
Short Acting + Intermediate Acting Insulin	Inj. Insulin isophane/nph + h. insulin 70/30	1	2	0.8
	Inj. Insulin isophane/nph + h. insulin 75/25	1		
Na. Glucose Co Transporter 2 Inhibitor + DPP4 Inhibitor	T. Empagliflozin + linagliptin	1	1	0.4
Loop diuretics	T. Torsemide	1	1	0.4
Alpha blockers	T. Prazosin	4	4	1.7
ARBs	T. Losartan	5	35	14.6
	T. Telmisartan	30		
CCBs	T. Cilnidipine	22	33	13.8
	T. Amlodipine	9		
	T. Nifedipine	2		
Beta blockers	T. Atenolol	1	8	3.3
	T. Bisoprolol	1		
	T. Metaprolol	3		
	T. Propranolol	3		
ACE inhibitors	T. Ramipril	3	3	1.3
HMG CoA reductase inhibitor	T. Atorvastatin	8	8	3.3
Anti platelets	T. Aspirin	1	4	1.7
	T. Clopidogrel	3		
ARBs + Thiazide Diuretics	T. Telmisartan + hydrochlorothiazide	6	11	4.6
	T. Telmisartan + chlorthalidone	5		
CCBs + Beta Blocker	T. Amlodipine + atenolol	2	2	0.8
CCBs + Arb's	T. Amlodipine + telmisartan	1	1	0.4
Beta Blocker + ARBs	T. Atenolol + losartan	1	1	0.4
Loop diuretics + potassium sparing diuretics	T. Furosemide + spironolactone	5	5	2.1
Ace inhibitors + thiazide diuretics	T. Ramipril + hydrochlorothiazide	1	1	0.4
Moxonidine	T. Moxonidine	4	4	1.7
HMG CoA reductase inhibitor + anti platelet	T. Rosuvastatin + aspirin + clopidogrel	1	1	0.4
Antiplatelet + HMG CoA reductase inhibitor + ACE inhibitors	T. Aspirin + atorvastatin + ramipril	1	1	0.4
T2DM AND HTN + IHD (n=71)				
Short-Acting Insulin	Insulin actrapid	1	1	1.4
Long-Acting Insulin	Insulin degludec	1	1	1.4
Biguanides	T. Metformin	4	4	5.6
Sulfonylureas + Biguanides	T. Glimepiride + metformin	13	14	19.7
	T. Glibenclamide + metformin	1		
Na.Glucose Co Transporter 2 Inhibitor + DPP4 Inhibitors	T. Empagliflozin + lingliptin	1	1	1.4

Continued.

Class of drugs	Drugs	No. of drugs	No. of total drugs	Percentage
Biguanides + Thiazolidindiones	T. Metformin + pioglitazone	2	2	2.8
CCBs	T. Cilnidipine	10	11	15.5
	T. Amlodipine	1		
ARBs	T. Losartan	6	9	12.7
	T. Telmisartan	3		
Beta Blockers	T. Metoprolol	2	2	2.8
ARBs + Thiazide Diuretics	T. Telmisartan + hydrochlorothiazide	1	1	1.4
Loop Diuretics + Potassium Sparing Diuretics	T. Torsemide + spironolactone	6	6	8.5
Thiazide Diuretics	T. Hydrochlorothiazide	1	1	1.4
Anti Platelets	T. Clopidogrel	2	2	2.8
HMG CoA Reductase Inhibitor	T. Atorvastatin	1	1	1.4
HMG CoA Reductase Inhibitor + Anti Platelet	C. Atorvastatin + aspirin	6	15	21.1
	T. Atorvastatin + aspirin + clopidogrel	4		
	T. Atorvastatin + clopidogrel	5		
T2DM and dyslipidemia (n=33)				
Sulfonylureas	T. Glimepiride	2	2	6.1
DPP4 Inhibitors	T. Teneligliptin	1	1	3
Biguanides + Sulfonylureas	T. Metformin + glimepiride	3	3	9.1
Biguanides + DPP4 Inhibitors	T. Metformin + teneligliptin	5	8	24.2
	T. Metformin + sitagliptin	3		
Biguanides + Sulfonylures + Alpha Glucosidase Inhibitors	T. Metformin + glimepiride + voglibose	3	3	9.1
Na. glucose co transporter 2 inhibitors + biguanides	T. Dapagliflozin + metformin	1	1	3
HMG CoA Reductase Inhibitors	T. Atorvastatin	4	8	24.2
	T. Rosuvastatin	4		
HMG CoA Reductase Inhibitors + Anti-platelet	T. Rosuvastatin + aspirin	2	4	12.1
	T. Atorvastatin + clopidogrel	2		
Fibrates + HMG CoA Reductase Inhibitors	T. Fenofibrate + rosuvastatin	3	3	9.1
T2dm and htn + dyslipidemia (n=28)				
Sulfonylureas + biguanides	T. Gliclazide + metformin	3	6	21.4
	T. Glimepiride + metformin	3		
DPP4 Inhibitors	T. Teneligliptin	2	2	7.1
Alpha glucosidase inhibitors + biguanides	T. Voglibose + metformin	1	1	3.6
Beta blockers	T. Bisprolol	2	4	14.3
	T. Carvedilol	2		
CCBs	T. Cilnidipine	2	2	7.1
Loop diuretics + potassium sparing diuretics	T. Furosemide + spironolactone	1	1	3.6
ARBs	T. Telmisartan	4	6	21.4
	T. Losartan	2		
Imidazoline receptor agonists	T. Moxonidine	1	1	3.6
HMG CoA Reductase Inhibitors	T. Rosuvastatin	2	2	7.1
HMG CoA reductase inhibitors + anti platelets	C. Atorvastatin + aspirin	2	2	7.1
Fibrates + HMG CoA reductase inhibitor	T. Fenofibrate + rosuvastatin	1	1	3.6
T2DM AND HTN + MI (n=16)				
Biguanides	T. Metformin	1	1	6.3
Biguanides + Sulfonylures	T. Metformin + glimepiride	1	1	6.3
DPP4 Inhibitors + Biguanides	T. Teneligliptin + metformin	2	2	12.5
CCBs	T. Amlodipine	1	1	6.3
ARBs	T. Losartan	1	2	12.5
	T. Telmisartan	1		
ARBs+Betablocker	T. Telmisartan + metoprolol	1	1	6.3
HMG CoA reductase inhibitors	T. Rosuvastatin	1	1	6.3

Continued.

Class of drugs	Drugs	No. of drugs	No. of total drugs	Percentage
Anti Platelet + HMG CoA Reductase Inhibitor	T. Aspirin + atorvastatin	1	3	18.8
	C. Aspirin + atorvastatin + clopidogrel	2		
Nitrates	T. Isosorbide mononitrate	4	4	25
T2DM and IHD (n=4)				
HMG CoA reductase inhibitor + anti platelet	C. Atorvastatin + aspirin	1	2	50
	T. Atorvastatin + clopidogrel + aspirin	1		
Short acting + long acting insulin	Inj. Insulin isophane/nph +h.insulin70/30	1	1	25
Biguanides + Sulfonylureas + Thiazolidinediones	T. Metformin + glimepiride + pioglitazone	1	1	25
T2DM AND IHD + MI (n=4)				
Biguanides	T. Metformin	1	1	25
Antiplatelets	T. Aspirin + clopidogrel	1	1	25
HMG CoA reductase inhibitors	T. Atorvastatin	1	1	25
Potassium channel activators	T. Nicorandil	1	1	25

Table 6: Prescribing pattern in HTN.

Class of drugs	Drugs	No. of drugs	No. of total drugs (n=128)	Percentage
CCBs	Amlodipine	20	56	43.8
	Cilnidipine	31		
	Nifedipine	3		
	Diltiazem	2		
ACEs	T. Enalapril	1	1	0.8
ARBs	T. Losartan	1	55	43
	T. Olmesartan	3		
	T. Telmisartan	51		
Vasodilators	T. Hydralazine	2	2	1.6
Beta Blockers	T. Propranolol	1	5	3.9
	T. Metoprolol	4		
Alpha 2 adrenergic agonist	T. Clonidine	5	5	3.9
CCBs + Beta Blockers	T. Cilnidipine + Metoprolol	2	3	2.3
	T. Amlodipine + Atenolol	1		
Beta Blockers + ARBs	T. Atenolol + Losartan	1	1	0.8

Table 7: Hypertension with comorbidities prescriptions.

Hypertension comorbidities	No. of prescriptions (n=58)	Percentage
Dyslipidemia	24	41.4
IHD	22	37.9
T2DM	4	6.9
Asthma	1	1.7
RA	1	1.7
IHD + Dyslipidemia	2	3.4
Dyslipidemia + T2DM	2	3.4
Dyslipidemia + MI	1	1.7
IHD + MI	1	1.7

Table 8: Prescribing pattern of HTN with comorbidities.

Class of drugs	Drugs	No. of drugs	Total no. of drugs	Percentage
HTN and dyslipidemia (n=53)				
HMG CoA Reductase Inhibitor + Antiplatelet	T. Atorvastatin + Aspirin	13	13	24.5

Continued.

Class of drugs	Drugs	No. of drugs	Total no. of drugs	Percentage
HMG CoA Reductase Inhibitor	T. Atorvastatin	10	11	20.8
	T. Rosuvastatin	1		
ARBs	T. Telmisartan	9	9	17.0
Beta Blockers	T. Bisoprolol	3	6	11.3
	T. Metoprolol	3		
CCBs	T. Cilnidipine	4	6	11.3
	T. Nifedipine	2		
Loop Diuretics	T. Torsemide	3	3	5.7
ARBs + CCBs	T. Olmesartan + Amlodipine	2	2	3.8
ACE Inhibitors	T. Ramipril	1	1	1.9
CCBs + Beta Blockers	T. Amlodipine + Metoprolol	1	1	1.9
ARBs + Thiazide Diuretics	T. Telmisartan + Hydrochlorthiazide	1	1	1.9
HTN + IHD (n=55)				
Beta Blockers	T. Metoprolol	6	12	21.8
	T. Atenolol	4		
	T. Propranolol	2		
Anti Platelet + HMG CoA Reductase Inhibitor	C. Aspirin + Atorvastatin	3	8	14.5
	T. Aspirin + Atorvastatin	5		
HMG CoA Reductase Inhibitor + Anti Platelet	C. Atorvastatin + Aspirin	5	7	12.7
	C. Atorvastatin + Aspirin + Clopidogrel	2		
HMG CoA Reductase Inhibitor	T. Atorvastatin	4	7	12.7
	T. Rosuvastatin	3		
Anti Platelet	T. Clopidogrel	5	6	10.9
	T. Aspirin + Clopidogrel	1		
CCBs	T. Amlodipine	5	6	10.9
	T. Cilnidipine	1		
ARBs	T. Losartan	2	5	9.1
	T. Telmisartan	3		
ARBs + Thiazide Diuretics	T. Telmisartan + Hydrochlorothiazide	3	3	5.5
Loop Diuretics + Potassium Sparing Diuretics	T. Torsemide + Spironolactone	1	1	1.8
HTN + T2DM (n=9)				
CCBs	T. Cilnidipine	1	2	22.2
	T. Amlodipine	1		
Beta Blockers	T. Metoprolol	1	1	11.1
ARBs + Beta Blockers	T. Telmisartan + Metoprolol	1	1	11.1
ARBs + Thiazide Diuretics	T. Telmisartan + Hydrochlorothiazide	1	1	11.1
Biguanides	T. Metformin	2	2	22.2
Biguanides + Sulfonylureas	T. Metformin + Glimepiride	2	2	22.2
HTN and IHD + Dyslipidaemia (n=6)				
CCBs	T. Amlodipine	2	2	33.3
HMG CoA Reductase Inhibitor	T. Atorvastatin	2	2	33.3
Antiplatelet	T. Clopidogrel	2	2	33.3
HTN and Dyslipidemia, T2DM (n=6)				
CCBs	T. Amlodipine	1	1	16.7
HMG CoA Reductase Inhibitor	T. Atorvastatin	1	2	33.3
	T. Rosuvastatin	1		
Biguanides	T. Metformin	1	1	16.7

Continued.

Class of drugs	Drugs	No. of drugs	Total no. of drugs	Percentage
Sulfonylureas	T. Glimepiride	1	1	16.7
DPP4 Inhibitors	T. Teneligliptin	1	1	16.7
HTN and Dyslipidemia + MI (n=4)				
Class of drugs	**Drugs**	**No. of drugs**	**Total no. of drugs**	**Percentage**
Anti Platelet	T. Aspirin + Clopidogrel	1	1	25
HMG CoA Reductase Inhibitor	T. Atorvastatin	1	1	25
ACE Inhibitors	T. Ramipril	1	1	25
Nitrates	Nitroglycerin	1	1	25
HTN and IHD + MI (n=5)				
Anti Platelet + HMG CoA Reductase Inhibitor	C. Aspirin + Atorvastatin	1	1	20
ACE Inhibitors	T. Ramipril	1	1	20
CCBs	T. Cilnidipine	1	1	20
Thiazide Diuretics + ARBs	T. Chlorthalidone + Telmisartan	1	1	20
Nitrates	C. Nitroglycerine	1	1	20
HTN and asthma (n=4)				
ARBs	T. Telmisartan	1	1	25
CCBs	T. Cilnidipine	1	2	50
	T. Amlodipine	1		
Corticosteroid	INH. Budesonide	1	1	25

Table 9: Prescribing pattern in rheumatoid arthritis.

Class of drugs	Drugs	No. of drugs	No. of total drugs (n=112)	Percentage
DMARDs	T. Methotrexate	34	34	30.4
Vitamin B	T. Folic Acid	34	34	30.4
Aminoquinolines	T. Hydroxychloroquine	29	29	25.9
NSAIDs	T. Aceclofenac	2	2	1.8
Adrenal glucocorticoids	T. Prednisolone	7	7	6.3
Sulfonamides	T. Sulfasalazine	6	6	5.4

Table 10: Prescribing pattern in other chronic diseases.

Class of drug	Drugs	No. of drugs	No. of total drugs	Percentage
Rheumatoid arthritis comorbidities	**No. of prescriptions (n=34)**		**Percentage**	
IHD	5		14.7	
Prescribing pattern of RA + IHD (n=16)				
Anti Metabolite	T. Methotrexate	4	4	25
Vitamin B	T. Folic Acid	4	4	25
Adrenal glucocorticoid	T. Prednisolone	4	4	25
Anti Platelet	T. Clopidogrel + Aspirin	4	4	25
Prescribing Pattern in T1DM (n = 6)				
Short acting + intermediate acting insulin	Insulin Isophane/Nph + H. Insulin 75/25	4	6	100
	Insulin Isophane/Nph + H. Insulin 50/50	2		
Prescribing Pattern in Dyslipidemia (n=4)				
HMG CoA reductase inhibitor	T. Atorvastatin	1	1	25
	T. Rosuvastatin	2	2	50
Fibrate + HMG CoA reductase inhibitor	T. Fenofibrate + Rosuvastatin	1	1	25

Continued.

Class of drug	Drugs	No. of drugs	No. of total drugs	Percentage
Prescribing Pattern in MI (n=2)				
HMG CoA reductase inhibitor + antiplatelet	T. Atorvastatin + Aspirin + Clopidogrel	1	1	50
Nitrates	Isosorbide Dinitrate	1	1	50
Prescribing Pattern in IHD (n=23)				
Anti Platelet	T. Aspirin	8	13	56.5
	T. Clopidogrel	5		
HMG CoA reductase inhibitor	T. Atorvastatin	8	8	34.8
Beta Blocker	T. Carvedilol	2	2	8.7
Prescribing pattern in COPD (n=19)				
LABA + corticosteroid	INH. Formoterol + Budesonide	4	5	26.3
	INH. Salmeterol + Fluticasone Propionate	1		
Bronchodilators + anti cholinergic	INH. Salbutamol + Ipratropium Bromide	4	4	21.1
Bronchodilators	INH. Salbutamol	2	2	10.5
Adrenergic receptor agonists	Syp. Terbutaline	1	1	5.3
Bronchodilator + mucolytic agent	T. Acebrophylline + Acetylcysteine	1	1	5.3
Quinolone antibiotic	T. Ciprofloxacin	1	1	5.3
Methylxanthines	T. Etophyllin + Theophylline	1	1	5.3
LTRAs + Anti Histamines	T. Montelukast + Levocetirizine	2	2	10.5
Glucocorticoids	T. Methylprednisolone	2	2	10.5
Prescribing pattern in COPD (n=2)				
LABA + Corticosteroid	INH. Formoterol + Budesonide	1	1	50
Mucolytic + Expectorant + Menthol + Adrenergic Receptor Agonists	Syp. Bromhexine + Guaifenesin + Menthol + Terbutaline	1	1	50

The most commonly prescribed drugs in patients with T2DM with HTN was sulfonylureas + biguanides and ARBs. The most commonly prescribed drugs in patients with T2DM with HTN + IHD is observed as HMG CoA reductase inhibitor + anti platelet and sulfonylureas + biguanides (Table 5).

Prescribing pattern in hypertension

Among the 174 prescriptions for HTN, 116 prescriptions were with only the diagnosis of HTN. The most commonly prescribed monotherapy was CCB followed by ARBs and in combination CCBs + beta blockers was highest. The average number of the drug per prescription was one drug (Table 6).

Prescribing pattern in hypertension with co-morbidities

Among 174 prescriptions, 58 prescriptions had HTN with comorbidities where the most common comorbidity found was dyslipidemia followed by IHD and then T2DM. The most common prescriptions of HTN with 2 comorbidities were IHD and dyslipidemia followed by dyslipidemia + T2DM and then IHD and MI. The average number of the drug per prescription was two drugs (Table 7).

The most commonly prescribed drugs in patients with HTN and dyslipidemia was HMG CoA reductase inhibitor + antiplatelet followed by HMG CoA reductase inhibitor and the most commonly prescribed drugs in patients with HTN and IHD was observed as beta blockers followed by anti-platelet + HMG CoA reductase inhibitor (Table 8).

Prescribing pattern in rheumatoid arthritis

A total of 34 prescriptions was found with RA where most commonly prescribed was methotrexate and folic acid (30.4%) which was seen in every prescription followed by hydroxychloroquine (25.9) and then prednisolone (6.3%) and sulfasalazine (5.4%) (Table 9).

Rheumatoid arthritis prescriptions with co-morbidities were 5 with IHD as a co-morbidity. Drugs that were prescribed for this condition is elaborated in (Table 10).

Prescribing pattern in other chronic diseases

Among 511 prescriptions that were screened, 30 prescriptions were found with following disorders, IHD (1.6%), T1DM (1.2%), COPD (1.6%), MI (0.2%), asthma (0.2%). The prescribing pattern of these disorders in elaborated in the (Table 10).

DISCUSSION

The demographic profile in this study showed that the majority of patients belonged to the age group of 60-69 years (28.2%), with a mean age of 56.4 years, and a male predominance (56.2%). This aligns with findings from Sreedharan et al, where chronic disease prevalence was higher among older adults, particularly males, due to age-related risk factors and lifestyle changes.[12] Aging populations are known to experience higher rates of non-communicable diseases (NCDs), including hypertension and diabetes mellitus, as corroborated by WHO reports.[13] T2DM was the most common chronic condition observed (53.4%), followed by HTN (34.1%). Comorbidities such as T2DM with HTN (66.4%) were frequently reported, consistent with studies by Acharya et al., which also identified T2DM and HTN as prevalent coexisting conditions in community settings.[13] These comorbidities often share pathophysiological mechanisms and risk factors, thus necessitating combined therapeutic approaches Upadhyay et al.[14] The anatomical therapeutic chemical (ATC) classification revealed that cardiovascular drugs (51.7%) were most prescribed, followed by drugs for the alimentary tract and metabolism (32.3%). A similar distribution pattern was found in studies conducted by Dashputra et al and Gupta et al, reflecting the global burden of cardiovascular and metabolic disorders.[15,16] The high utilization of antihypertensive and antidiabetic agents indicates adherence to established treatment practices in chronic disease management. Among antidiabetic regimens, the most commonly prescribed combination was biguanides + sulfonylureas, particularly metformin and glimepiride. This is consistent with findings from Das et al, which found this combination effective in glycemic control and widely used due to affordability and tolerability.[17] The study also noted an increased prescription of DPP-4 inhibitors and insulin, especially in patients with poor glycemic control, supporting findings from Haghighatpanah et al.[18] For HTN management, monotherapy with calcium channel blockers (CCBs) was predominant (48.27%), followed closely by angiotensin receptor blockers (ARBs) (47.4%). This prescribing trend mirrors that reported in studies by Sreedharan et al and Rachna et al, where CCBs and ARBs were favored due to their efficacy and safety profiles, particularly in elderly patients.[12,19] Few limitations in this study such as lack of cooperation from some patients and limited time for patient interaction. Communication barriers due to local language differences and the busy schedules during rush hours also posed challenges, affecting the depth of data collection and the overall comprehensiveness of the data.

CONCLUSION

In conclusion, this study highlighted the prevalent use of rational prescribing practices for chronic diseases in community settings. However, the need for pharmacist-led medication reviews and patient counselling to ensure safety, adherence, and therapeutic efficacy.

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