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Impact of Clinical Pharmacy Services in Care of Patients with Cardiovascular Diseases: [A Prospective Study]

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Abstract

Aim: The main aim of this study is to is to evaluate the impact of clinical pharmacy services in care of patients with cardiovascular diseases.

Objective: This study has highlighted the clinical pharmacy services in patients with cardiovascular diseases to achieve better quality of life with Patient counselling, encouraging Medication adherence and to evaluate Medication interventions and to ensure Cost effective treatment.

Methodology: The study included all patients who had cardiovascular diseases met inclusions criteria were included. Total selective prescriptions of 248 patients were included in the study. Convenient enrolment technique was employed in which all patients in cardiological department who were selectively observed with pharmaceutical care in Aster Prime Hospital from Oct 2018 to March 2019 were enrolled.

Result: A total of 248 cases have been studied for the evaluation of the evaluated impact of clinical pharmacy services in care of patients with cardiovascular diseases at the Aster Prime Hospital Hyderabad. Commonest age range of the patients was 61-70 years. The incidence of cardiovascular diseases in 185 (75%) were male and 63 (25%) were female. In our study we conclude the dose management for comorbid conditions were analysed and evaluated with the utilization of high-end prescribing drugs and other preferred therapies. In our study we conclude that the STOPP/START (Screening Tool of Older Persons' Prescriptions/Screening Tool to Alert doctors to Right Treatment) was found to be most useful for reducing Drug Related causes for Patients suffering from cardiovascular diseases. In Disease Related causes for Patients suffering from cardiovascular diseases the STOPP/START tool helped to avoid catastrophic events.

Keywords: Pharmaceutical care; Quality of life; STOPP/START; Cardiovascular diseases

Introduction

Medicate treatment is a fundamental component of restorative care to anticipate, remedy and control illness. Its reason is to diminish dreariness and mortality and to extend health-related quality of life (HRQoL). Treatment with drugs could be a prerequisite for numerous individuals in arrange to operate well and be able to live in their claim homes as long as conceivable. In any case, issues related with medicate treatment such as pharmaceutical mistakes and antagonistic medicate occasions are visit, particularly among the elderly. It has been appeared that at slightest 5% of clinic confirmations are caused by drug-related issues; higher prevalences have ordinarily been found within the elderly populace and among psychiatric patients [1-3].

Lethal unfavorable medicate responses has been evaluated to be the seventh most common cause of passing. Hence, there's an critical require for strategies that make strides quality and security of endorsing and decrease adverse drug occasions. There's a huge potential to progress the circumstance as the larger part of drug-related affirmations to healing center has been evaluated to be preventable. Given the complexity of the method driving to pharmaceutical blunders and unfavorable sedate occasions, it is likely that intercessions for understanding and anticipating drug-related issues got to be multifaceted [1].

Drug safety issues in the elderly

The elderly populace is consistently expanding all through most of the world. Concurring to a report from the Joined together Countries, the extent of people over 60 a long time is anticipated to reach 22% in 2050, compared with 11% in 2009. In Sweden, 24.7% of the populace was over 60 a long time as of now in 2009; as it were three nations within the world had a better extent of people over 60 a long time. A major challenge in connection to this statistic shift is to guarantee that sedate treatment when required within the elderly is secure and viable [4-6].

This can be a complex errand, particularly in patients with age-related physiological changes, multimorbidity and polypharmacy. Numerous elderly have a number of co-morbid unremitting infections and, so, are regularly endorsed a number of diverse drugs to be utilized concurrently (known as polypharmacy). The predominance of polypharmacy has expanded amid later a long time. Polypharmacy can be legitimized in patients with different comorbidities but may too be unseemly. In any case, the chance of antagonistic medicate responses and medicate intelligent increment exponentially with the number of drugs taken. On the other hand, undertreatment or helpful disappointment may moreover happen within the elderly [7].

Appropriate prescribing

Suitable endorsing may be a common express to precise the quality of endorsing of solutions for the person quiet. In a wide sense, fitting endorsing includes a number of values, counting the wants of the persistent, the logical and technical rationale for the utilize of the pharmaceutical, and the common great that's anticipated to be inferred from the utilize of the medicine (societal and family-related). No set definition of improper endorsing has been built up, but it can be portrayed as: "the use of medications that present a noteworthy chance of an unfavorable drug-related occasion where there's prove for an similarly or more compelling but lower-risk elective treatment accessible for treating the same condition". The under-use of advantageous drugs that are clinically shown but not endorsed for nonsensical reasons may too be characterized as unseemly endorsing [8].

STOPP/START Screening Tool

The STOPP/START screening software is a tool created as portion of this venture which takes as input persistent cases and medicine histories (through GUI input or information record) and to begin with analyzes them for STOPP run the show infringement [9]. These rule-violations are displayed to the client (e.g. a drug specialist or common specialist) and the specific threats of the medicine arrange are shown.

Following the STOPP screening, the computer program decides in the event that there are any medicines which ought to be included to the medicine arrange as per the START criteria. Any increases to the medicine arrange are checked through the STOPP screening instrument to find on the off chance that the augmentations may lead to infringement of the STOPP criteria [10].

Aim

The main aim of this study is to evaluate the impact of clinical pharmacy services in care of patients with cardiovascular diseases.

Objectives

To highlight the medicine practices of drugs within the administration of both inpatient and outpatient divisions.

Our points of interest are:

- To evaluate the impact of clinical pharmacy services in care of patients with cardiovascular diseases admitted in the cardiology unit of a university-affiliated hospital.
- To assess the work of clinical pharmacy services in patients with cardiovascular diseases to achieve better quality of life with Patient counselling, encouraging Medication adherence and to evaluate Medication interventions and to ensure Cost effective treatment.

Methodology

Study population

The study included all patients in Cardiological department suffering from cardiovascular diseases who were selected by case reports, prescription pattern pharmaceutical care and quality of life with there literacy level during the study period.

Sample size

Sample size was convenient sampling in which all patients who had cardiovascular diseases met inclusions criteria were included. Total selective prescriptions of 248 patients were included in the study.

Results

Discussion

Table 1: Demographic data of our studied Patients.

Sl.no.	Demographics		
1.	**Age in years**		**Number of patients**
	i.	41 - 50	42
	ii.	51 - 60	86
	iii.	61 - 70	118
	iv.	71- 80	2
2.	**Sex**		
	i.	Male	185
	ii.	Female	63
3.	Body mass index in Kg/m^2		
	i.	Underweight (<18.5)	27
	ii.	Normal weight (18.5 – 24.9)	93
	iii.	Overweight (25 – 29.9)	128

Table 2: Social History of Patients.

S. no	Social history	N	%
1	Smokers	100	40.32%
2	Alcoholic	45	18.14%
3	Both smoking & Alcohol consumption	43	17.33%
4	None	60	24.19%

In the present study of 248 patients, 185 (75%) were male and 63 (25%) were female. In our study it was found that cardiovascular diseases patients were more prevalent in males than females. Evaluation of Patient characteristics showed that out of 248 patients, 26.61% were indicating for Hypertension,

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12.90% were of indicating for Ischaemic heart disease, Heart failure, Hyperlipedemic respectively. 13.70% were indicating for Myocardial infarction, 9.27% were indicating for Stroke, 11.69% were indicating for Angina. In our study, out of 248 patients, out these patients, 39.51 % were suffering from Diabetes Mellitus. Other comorbid conditions were Chronic Obstructive Pulmonary Disease in 1.61%, Kidney disease in 2.01% (Table 1-9) (Figure 1-10).

Table 3: Drugs prescribed in our study.

S. no	Drugs prescribed	No. of Drugs	Prescription rate (%)
1	**Lipid lowering agents**	**412**	
	Rosuvastatin+ Clopidogrel + Aspirin	121	29.36%
	Atorvastatin + Clopidogrel + Aspirin	291	70.63%
2	**Anti-atherogenics**	**327**	
	Clopidogrel + Aspirin	165	50.45%
	Atorvastatin + Clopidogrel	162	49.54%
3	**Anti-Anginals**	**521**	
	Nitroglycerine + Isosorbide	167	32.05%
	isosorbide mononitrate and hydralazine	354	67.94%
4	**Beta blockers**	**647**	
	Metoprolol + Nifedipine	194	29.98%
	Hydrochlorothiazide and Metoprolol	453	70.01%
5	**Diuretics**	**654**	
	Ramipril+Telmisartan +Hydrochlorthiazide	215	32.87%
	Metoprolol + Hydrochlorthiazide	210	32.11%
	Spironolactone + Furosemide	229	45.58%
6	**ARBs**	**547**	
	Telmisartan +Amlodipine	342	62.52%
	Olmesartan +Hydrochlorthiazide	205	37.47%
7	**Miscellaneous**	**438**	
	Amlodipine + Atorvastatin,	167	38.12%
	Amlodipine + Valsartan	132	30.13%
	Atenolol + Amlodipine	139	31.73%

Table 4: Grouping of prescriptions as per diseases and age.

Cardiovascular Diseases	41 – 50 years of age	51 – 60 years of age	61 –70 years of age	71- 80 years of age	Percentages (%)
Hypertension	5	12	49	-	26.61%
Ischaemic heart disease	3	13	16	-	12.90%
Heart failure	5	18	9	-	12.90%
Myocardial infarction	8	14	12	-	13.70%
Stroke	6	5	10	2	9.27%
Hyperlipedemic	8	14	10	-	12.90%
Angina	7	10	12	-	11.69%
N=248	42	86	118	2	100%

Table 5: Comorbidity conditions.

Comorbidity	No of Prescriptions	%
Hypertension + Ischemic Heart Disease	98	39.51 %
Hypertension + Diabetes Mellitus	42	16.93 %
Kidney disease	5	2.01 %
Arrhythmias	8	3.22%
Respiratory Disease	4	1.61%
Anaemia	5	2.01%
GIT disorder	2	0.80%

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Table 6: Drug Related Causes.

Drug Related Causes	No. of Patients	PC	Not PC
Digoxin Intoxication	10	8	2
Over-Prescribing of Antihypertensives	30	26	4
Dehydration due to over Prescribing of Diuretics	8	5	3
Anaemia due to Aspirin or NSAIDS	5	3	2
Confusions/Fall due to sedatives, opioids, anticholergenics	3	2	1
Diarrhoea due to antibiotic treatment	5	4	1
Hyperkalemia	2	1	1
Hypernatraemia	3	2	1
Atrial Fibrillation	15	12	3
Bleed due to Warfarin	43	35	8
Total	**124**	**98**	**26**

*PC= Patient Counselling

Table 7: Disease Related Causes.

Disease Related Causes	No. of Patients	PC	Not PC
Smoking	12	8	4
Hypertension	13	10	3
Hyperlipidemia	32	25	7
Chronic renal dysfunction	5	4	1
Diabetes mellitus	28	24	4
COPD	4	3	1
Peripheral vascular disease	10	8	2
Prior Myocardial Infarction	12	10	2
Prior Percutaneous Coronary Intervention	8	7	1
Total	**124**	**99**	**25**

*PC= Patient Counselling

Table 8: Screening Tool of Older Persons' Prescriptions.

STOPP	No. of Patients	PC (STOPP)	Not PC(STOPP)
Aspirin with no history of coronary, cerebral or peripheral arterial occlusive symptoms	12	8	4
Calcium channel blockers with chronic constipation	14	12	2
Non-cardioselective beta-blocker with chronic obstructive pulmonary disease	39	30	9
Use of aspirin and warfarin in combination without histamine H2 receptor antagonist (except cimetidine because of interaction with warfarin) or proton pump inhibitors	5	4	1
Dipyridamole as monotherapy for cardiovascular secondary prevention	6	4	2
Aspirin to treat dizziness not clearly attributable to cerebrovascular disease	15	12	3
Phenothiazines in patients with epilepsy	4	3	1
Diphenoxylate, loperamide or codeine phosphate for treatment of severe gastroenteritis	5	4	1
Selective alpha-blockers in males with frequent urinary incontinence, i.e. one or more episodes of incontinence daily	4	3	1
First-generation antihistamines in patients with falls	12	10	2
Long-term opioids in patients with falls	10	7	3
Long-term opioids in those with dementia unless indicated for palliative care or management of moderate/severe chronic pain syndrome	4	3	1
Total	**130**	**100**	**30**

*PC= Patient Counselling

*PC (STOPP)= No. of patients avoided drugs

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Table 9: Screening Tool to Alert doctors to Right Treatment.

START	No. of Patients	PC (START)	Not PC(START)
Metformin with type 2 diabetes mellitus +/− metabolic syndrome (in the absence of renal impairment, i.e. serum creatinine > 150 µmol/l, or estimated GFR < 50ml/min/1.73 m^2)	35	30	5
Calcium channel blockers with chronic constipation	4	3	1
Aspirin for primary prevention of cardiovascular disease in diabetes mellitus	30	27	3
Statin therapy for primary prevention of cardiovascular disease in diabetes mellitus	18	15	4
ACE inhibitor or angiotensin receptor blocker in diabetes with nephropathy i.e. overt urinalysis proteinuria or micoralbuminuria (> 30 mg/24 hours) T serum biochemical renal impairment. (Estimated GFR < 50 ml/minute)	5	4	1
Warfarin in the presence of chronic atrial fibrillation	7	5	2
Aspirin in the presence of chronic atrial fibrillation, where warfarin is contra-indicated, but not aspirin	4	3	1
Aspirin or clopidogrel with a documented history of atherosclerotic coronary, cerebral or peripheral vascular disease in patients with sinus rhythm	3	2	1
Antihypertensive therapy where systolic blood pressure consistently > 160 mmHg	8	6	2
Statin therapy with a documented history of coronary, cerebral or peripheral vascular disease, where the patient's functional status remains independent for activities of daily living and life expectancy is > 5 years	4	3	1
Total	**118**	**97**	**21**

*PC= Patient Counselling

*PC(START)= No. of patients alerted drugs.

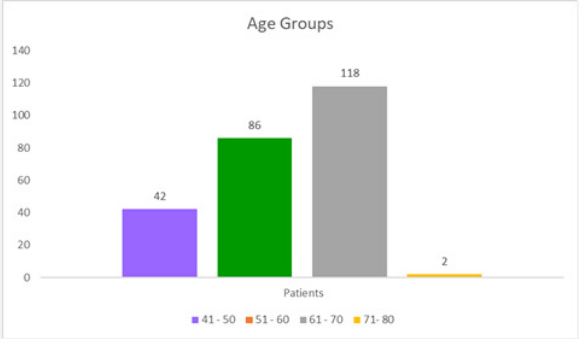

Figure 1: Demographics of Age Groups.

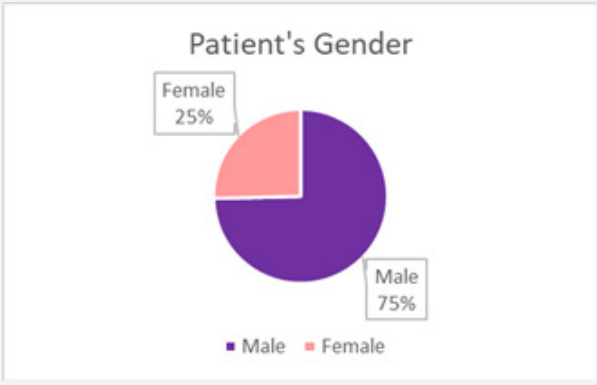

Figure 2: Demographics of Patient's Gender.

Conclusion

A total of 248 cases have been studied for the evaluation of the evaluated impact of clinical pharmacy services in care of patients with cardiovascular diseases. Commonest age range of the patients was 61-70 years. The incidence of cardiovascular diseases in 185 (75%) were male and 63 (25%) were female. In our study we conclude the dose management for comorbid conditions were analysed and evaluated with the utilization of high-end prescribing drugs and other preferred therapies.

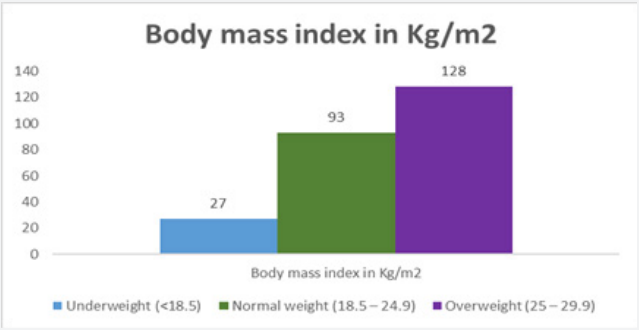

Figure 3: Demographics of Patient's Body mass index.

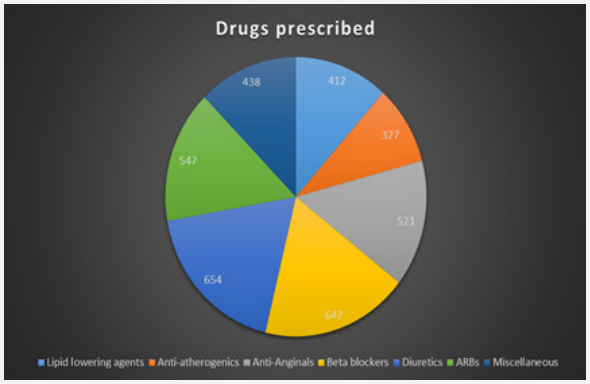

Figure 4: Drugs prescribed in our study.

The study also monitors the The STOPP/START (Screening Tool of Older Persons' Prescriptions/Screening Tool to Alert doctors to Right Treatment).

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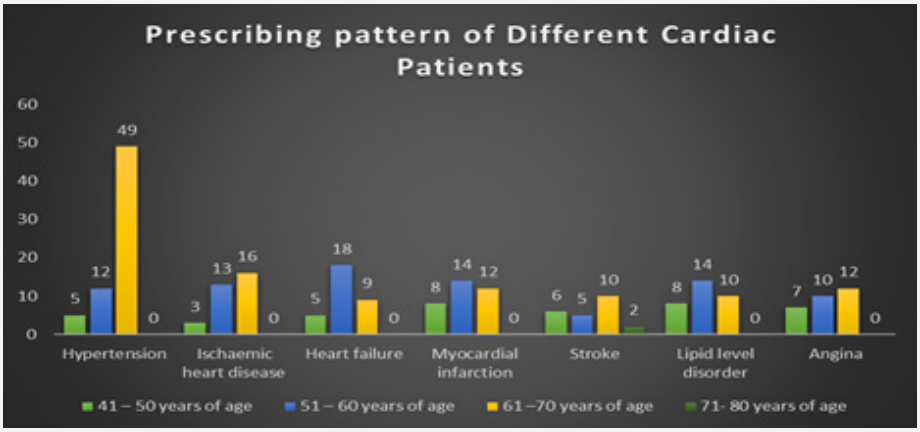

Figure 5: Grouping of prescriptions as per diseases and age.

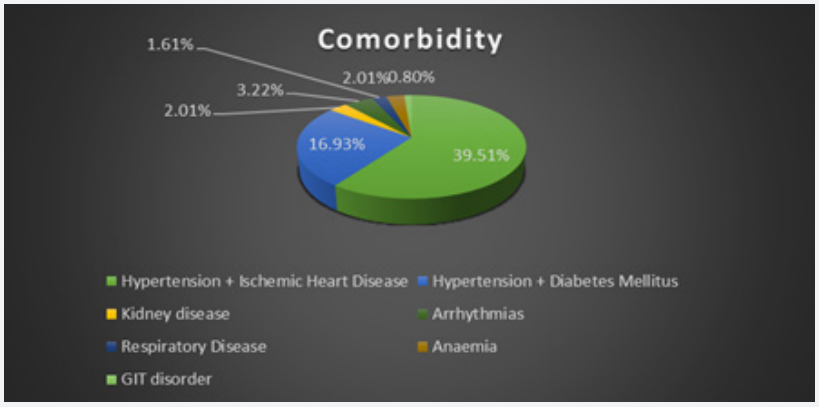

Figure 6: Comorbidity conditions.

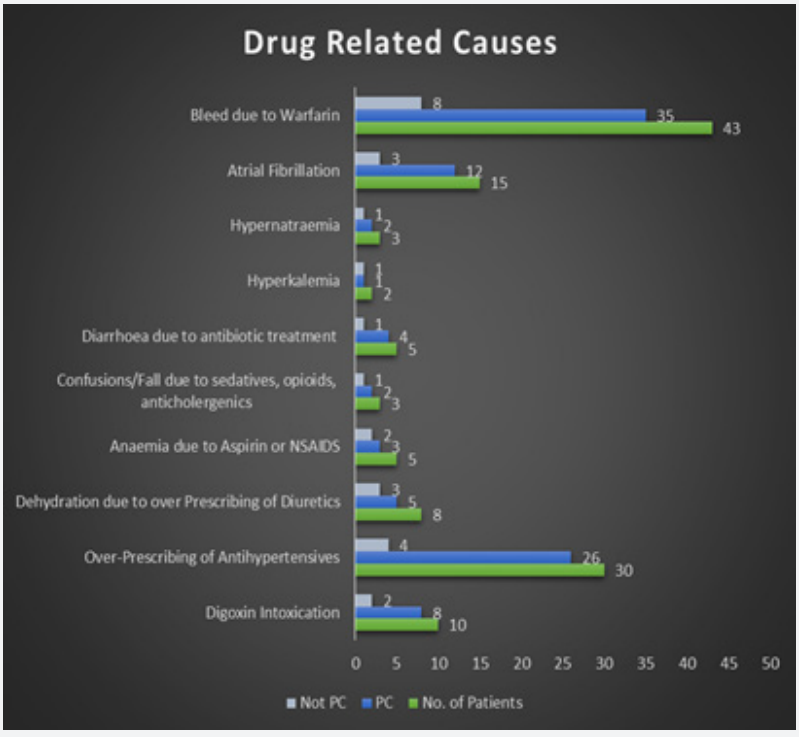

Figure 7: Drug Related Causes.

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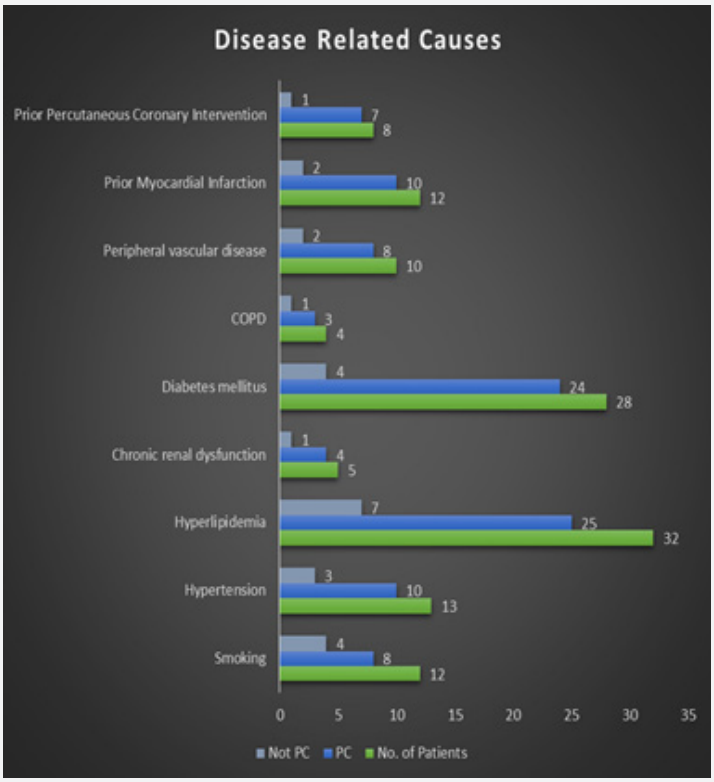

Figure 8: Disease Related Causes.

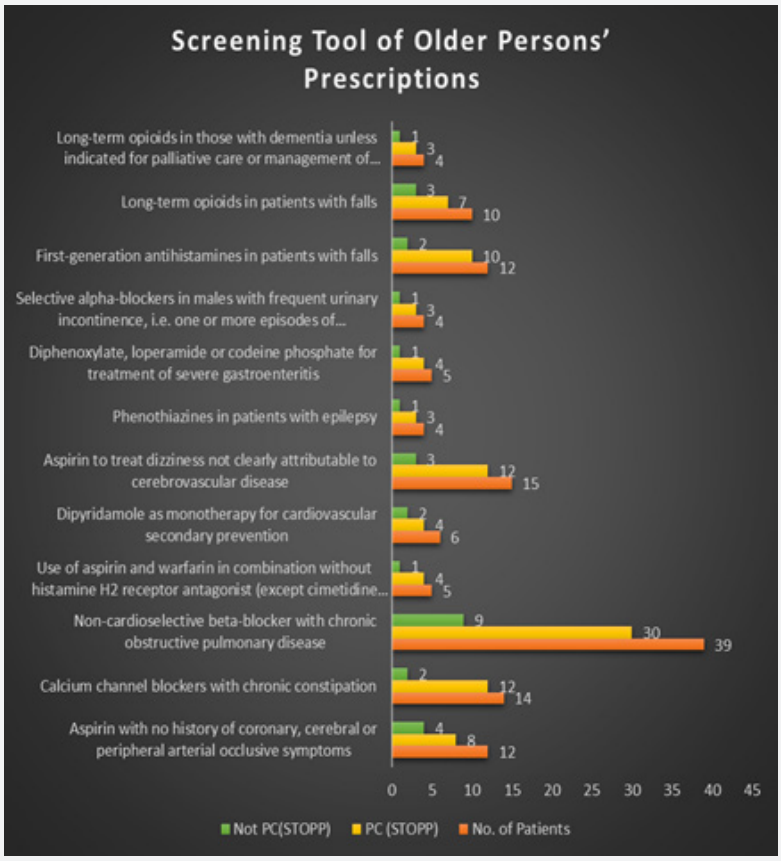

Figure 9: Screening Tool of Older Persons' Prescriptions.

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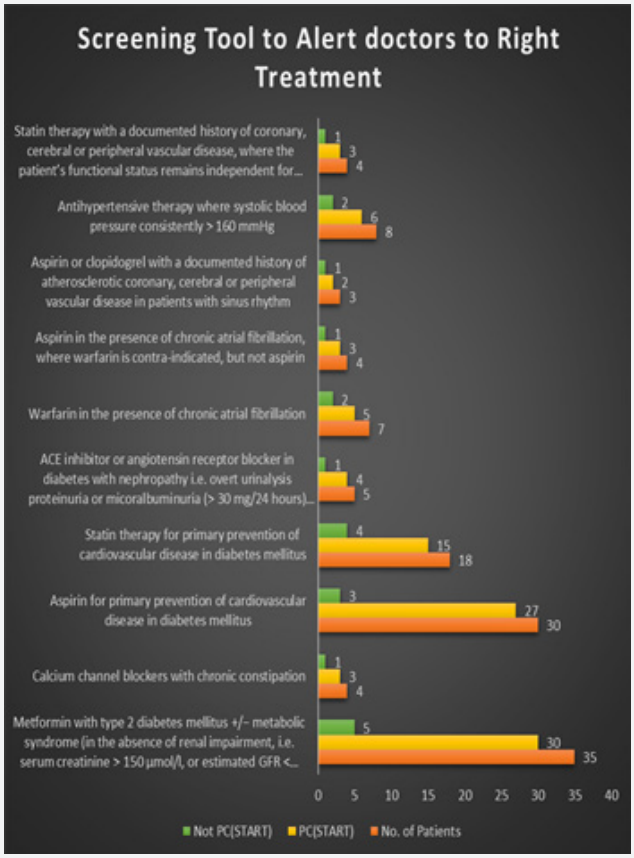

Figure 10: Screening Tool to Alert doctors to Right Treatment.

In Screening Tool of Older Persons' Prescriptions study 130 patients were prescribed with STOPP tool. Out of these 130 patients, 100 patients were in accordance with STOPP tool. The other 30 patients were not in accordance with STOPP.

In Screening Tool to Alert doctors to Right Treatment study 118 patients were prescribed with START tool. Out of these 118 patients, 97 patients were in accordance with START tool. The other 21 patients were not in accordance with START.

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