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COMMUNITY BASED STUDY ON PRESCRIPTION PATTERN OF ANTI- HYPERTENSIVE DRUGS IN URBAN AREA OF BANGALORE

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ABSTRACT

It is important to know the prescription of hypertensive individuals are followed in the community in order to prevent complications and high mortality rates when associated with co morbid conditions like Diabetes Mellitus. The objective of this study was to know the pattern of prescriptions of anti- hypertensive drugs in urban area of Bangalore city. Community based, descriptive and observational study was conducted during August and September 2015 in the selected urban area of Bangalore city among 350 randomly selected known hypertensive patients. Data was collected at their door steps using the pilot tested semi open ended questionnaire. The supportive documents were verified for the authenticity of the data from all the patients. There were 55 and 46 percent of the females and males subjects aged 30 years and above. Eighty percent of them aged between 41 to 70 years. Mono drug therapy was prescribed for 80% of the subjects and 55% of them were on Calcium Channel Blockers group of drugs. The median duration of hypertension was 60 months and Diabetes Mellitus was the co morbid conditions among 27%. To conclude, nearly 80% of the study subjects in this urban community were prescribed monodrug therapy and Calcium Channel Blockers group of drugs was the common drug among all the subjects. The prescription pattern was in accord with the JNC recommendation by the practicing physicians.

KEYWORDS: Prescription, Mono drug, Hypertension, Community Based.

INTRODUCTION

Hypertension is one of the leading cause for many cardiovascular disease emergencies and it is increasing due to other underlying conditions resulting from lifestyle disorders. The prevalence of hypertension is wide in different parts of the world and in India the prevalence and its complications are estimated to be in India as 26.9% respectively.[1] It is found to be increasing trend in rural and urban areas. Early diagnosis and regular treatment is very important in order to reduce the complications and mortality resulting from hypertension. Most of the cases of hypertension cases are diagnosed by primary care physicians or general practitioners in private sectors. The guidelines are set up for the standard management of hypertension by the respective associations and it prevents most of the complications, better quality of life and avoids sudden deaths from cardiac complications.

There are different categories of drugs are available for the treatment of hypertension of different stages with or without complications. There are many studies done to know whether the hypertensive patients were prescribed anti-hypertensive medications either in single or in combinations as per JNC.[2,3] Some of these studies are done by the pharmacists or hospital based studies.[2,3,4,5,6,7] Few studies were done in the community on the pattern of medicines prescribed by the different physicians for variable duration.[1] Most of the diagnosed patients do not consume medicines regularly either because of financial problems or missing doses due to forgetfulness. To limit this problem many were prescribed with combination of medicines in a single tablet. This study was conducted with the objective to find the pattern of anti-hypertensive medications prescribed for hypertensive patients in the urban community of Bangalore.

MATERIALS AND METHODS

This is a community based, descriptive and observational study done during the period of August and September 2015 in a sample population of urban area of Southern part of Bangalore. The ward number 32 was selected for the study. The inclusion criteria for the subject for study was individual must be above 30 years and already diagnosed as hypertension irrespective of duration and who is currently on treatment for the same. The consent was taken from each individual subject after explaining the importance and impact of this study. Data was collected at the door step of the subjects at their residence. Houses were randomly selected from the streets enquiring about individuals who are on treatment for hypertension. The supportive document such as patient prescription slip, health record or file,

tablet strips being used for confirmation of medicine use and other details necessary for the study. Their blood pressure was recorded using the sphygmomanometer in sitting posture after the data collection as part of the study protocol.

Data included the demographic details, history of hypertension, medicine prescribed, dosage and pattern of consumption of the medication, associated co morbid conditions etc. the data was analysed using SPSS version 20. The analysis was done on demographic profile of subjects, types of drugs, classification of hypertensive agents, duration of hypertension, co morbid conditions.

Expansion of Abbreviations used in this study
CCB: Calcium Channel Blocker.
ARB: Angiotensin Receptor Blocker.
BB: Beta Blocker.
ACEI: Angiotensin Convertor Enzyme Inhibitor.

RESULTS

Table1 shows 56 and 44 percent of the subjects were males and females respectively. Nearly 80 percent of the subjects were aged between 41 and 70 years. Many of the female subjects were home makers and 80% of the males were employed either as salary or on daily wage basis. Diabetes mellitus was the common co morbid condition in both sexes and there were no much differences in co-morbid condition between males and females.

Figure 1 shows the distribution of duration of hypertension in different age groups. There is increase in proportion of subjects with duration of hypertension with respect to their age group. Nearly 50 percent of the subjects were aged below 50 years were hypertensive of less than 36 months. However in the age group of more than 60 years many were diagnosed as hypertensive since last 36 months. Nearly one third were hypertensive patients of less than 37 months and 6% were more than 145 months duration. There is higher proportion of females diagnosed to be hypertensive initiated on treatment since last one year.

Table 2 shows the categories of anti-hypertensive drugs were CCB, ARB, BB, Diuretics and ACEI as 47, 30.6, 23.4, 11 and 3 percent respectively. Nearly 80 percent of the subjects were on mono drug therapy and 54.5% of the subjects were on CCB group of drug. The difference

in taking antihypertensive medicines were found to be statistically significant ($p<0.05$). The difference in using mono drug therapy was found to be statistically significant.

Table 1: Distribution of basic characteristics of subjects.

	Male N (%)	Female N (%)	Total N (%)
Age groups in years ≤40	5(3)	25(13)	30(9)
41-50	38(25)	57(29)	95(27)
51-60	50(33)	51(26)	101(29)
61-70	41(27)	40(20)	81(23)
>70	19(12)	24(12)	43(12)
Duration of Hypertension in months			
≤12	23(15)	42(21)	65(19)
13-36	26(17)	38(19)	64(18)
37-72	45(29)	63(32)	108(31)
73-108	28(18)	22(11)	50(14)
109-144	18(12)	24(24)	42(12)
≥145	13(8)	8(4)	21(6)
Procurement of Medicines			
Free	50(33)	68(35)	118(34)
Purchased	103(67)	129(65)	232(66)
Occupation status			
Employed	122(80)	32(16)	154(44)
Unemployed	23(15)	0(0)	23(7)
Homemaker	0(0)	165(84)	165(47)
Pensioners	8(5)	0(0)	8(2)
Co-Morbid conditions			
Diabetes Mellitus	43(28)	53(27)	96(27)
Others	110(72)	144(73)	254(73)
Total	**153**	**197**	**350**

Table-2 Distribution of Prescribed medicines by group and categories.

Categories of Medicines	Male N (%)	Female N (%)	Total N (%)	p-value
Overall N=350 CCB	56(37)	96(49)	152(43)	
ARB	32(21)	36(18)	68(19)	
Diuretics	20(13)	19(10)	39(11)	p=0.25
BB	40(26)	41(41)	81(23)	
ACEI	5(3)	5(3)	10(3)	
Total	153(100)	197(100)	350(100)	
On Mono drug N= 279				
CCB	56(50)	96(58)	152(54)	
ARB	27(24)	36(22)	63(23)	
BB	27(24)	31(19)	58(21)	p=0.55
ACEI	3(3)	3(2)	6(2)	
Total	113	166	279(100)	
Among Diabetics N=74				
CCB	14(50)	20(43)	34(46)	
ARB	9(32)	17(37)	26(35)	
BB	5(18)	8(17)	13(18)	
ACEI	0(0)	1(2)	1(1)	
Total	28	46	74(100)	

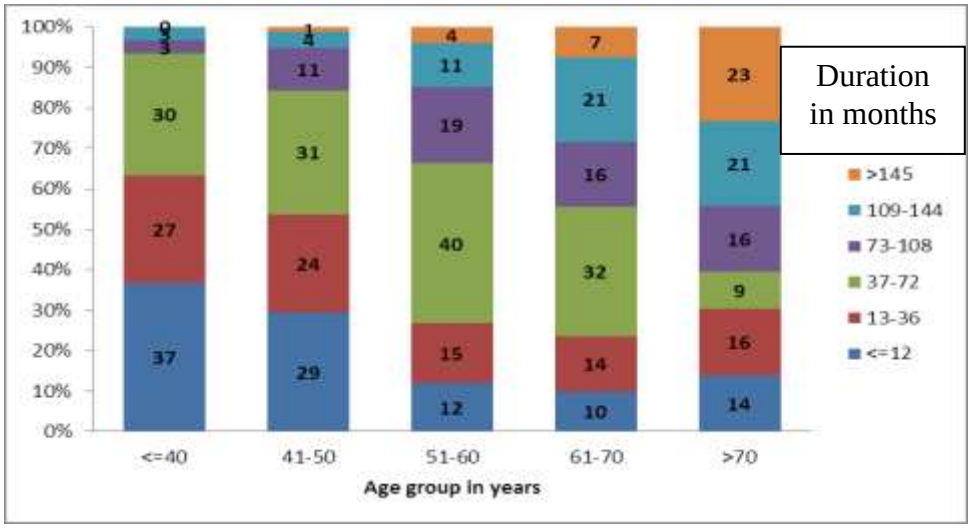

Figure 1. Distribution of subjects according to their age and duration of Hypertension in months.

DISCUSSION

This community based study analysed the data of 350 subjects of 19713 years and 22839 months duration of hypertension treatment with chemotherapeutic agents. The mean age of subjects was 56.3±12.2 years (males57.9±10.4 and females 55±13.8 years) and the median duration of hypertension was 60 months (range was 1 to 300) among males and females was 60 and 48 months respectively. The habits of smoking and alcohol were observed to be prevalent among 41 and 28 percent respectively among male subjects.

Most of the subjects were on treatment since last 36 months and it appears that the age at diagnosis of hypertension might be at younger age among currently aged subjects of 50 years and above as shown in Table 1. The trend of early diagnosis and treatment of hypertension is similar for age, while the duration of hypertension proportionally increased with increase in age group in this community. It is evident that Asians especially Indians are more vulnerable to cardiovascular diseases and diabetes mellitus conditions at the earlier age when compared to other races and regions. It is evident in this study the observations are similar since last decades, however the proportion of subjects where higher among subjects aged less than 40 years as shown in Figure1. Further analysis showed females were affected at younger age compared to male counterparts in this study. Thus it is high time to screen the community for hypertension at earlier age of 25 years at periodic interval.

The prevalence of diabetes mellitus is increasing at higher speed in the world, more rapid in developing countries and as a result cardiovascular diseases are likely to show high

prevalence of hypertension and increase in mortality. The proportion of diabetes mellitus among study subjects was 20% as shown in Table 1 and the trend is showing that majority of the subjects were in younger age group. The mean duration of hypertension was lower among females compared to males (males and females was 71.2±53.5 and 60.0±48.4 months).

The pattern of prescription of anti-hypertensive drugs is available from published studies on hospital based. The selections of subjects were age, severity of the hypertension and co morbid conditions are different in these studies.[3,4,5,7,8,9] The category of drugs for treatment of hypertension is followed according to JNC by most of the physicians. The practice of mono drug was common and it has accounted for 70 to 85% is observed in hospital based studies and similar was noted in this community based as 81%.[4,6,9,10,11,12] The common drugs used in mono therapy were CCB, ARB, BB, Diuretics and ACEI as 47, 30.6, 23.4, 11 and 3 percent respectively in the studies and among the diabetic patients it was 45.9, 36 and 17.6% for CCB, ARB and BB respectively as shown in Table 2. First choice of drugs are CCB 36 to 55%, followed by ACEI 29 to 64%, ARB 24 to 34% and diuretics is 15% in most of the hospital based studies.[3,5,7,8,11,12,13,14]

The trend of administration of drugs was similar among diabetic mellitus patients.[4,12,13,15] The observation in our community based study was in similar way to most of the hospital based subjects. Thus the pattern of prescription of anti-hypertensive drugs was followed by most of the physicians in our country and it appears to be in accordance with JNC recommendations.

CONCLUSION

This community based study shows the most of the prescriptions for treating hypertensive patients follow the JNC recommendation. Nearly 80 percent of the subjects are on mono drug therapy and the common drug was belonging to Calcium Channel Blockers followed by Angiotensin Receptor Blocker and Beta Blockers.

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REFERENCES

1. Laxmaiah A, Mesharam I I, Aralappa N, Balakrishna N, Mallikarjuna Rao K, Sharad Kumar. Socio-economic and demographic determinants of Hypertension on knowledge, practice and risk behavior of tribals in India. Ind Jr Med. Res., 2015 May; 141: 697-708.
2. Paul A James, Suzanne Oparil, Barry L Cart, William C Cushman, Cheryl Dennison. Evidence based guidelines for management of high blood pressure in adults. JAMA, 2013 December.
3. Vishal R. Tandon, Sudha Sharma, Shagun Mahajan, Annil Mahajan, Vijay Khajuria, Vivek Mahajan, Chander Prakash. Antihypertensive drug prescription patterns, rationality, and adherence to Joint National Committee-7 hypertension treatment guidelines among Indian postmenopausal women. J Midlife Health., 2014 Apr-Jun; 5(2): 78–83.
4. Sreedharan N[1], Rao PG, Rau NR, Shankar PR. Antihypertensive prescribing preferences in three South Indian Hospitals: cost analysis, physicians perspectives and emerging trends. Int J Clin Pharmacol Ther., 2011 Apr; 49(4): 277-85.
5. Ethiraj Dhanaraj, Amit Raval, Rajbharan Yadav, Anil Bhansali, Pramil Tiwari. Prescription Pattern of Antihypertensive Agents in T2DM Patients Visiting Tertiary Care Centre in North India International Journal of Hypertension Volume 2012; Article ID 520915, 9.
6. Rachana P R, Anuradha H V, M C Shivamurthy. Anti Hypertensive Prescribing Patterns and Cost Analysis for Primary Hypertension: A Retrospective Study. Journal of Clinical and Diagnostic Research, 2014 Sep; 8(9): 19-22.
7. Tasneem Sandozi, Vamsi Krishna Emani. Survey of Prescription Pattern of Anti-Hypertensive Drugs In Hypertensives & Hypertension Associated Diabetics. International Journal of Pharma and Bio Sciences, Vol.1/Issue-4/Oct-Dec. 2010; 23-26.
8. Mirza Atif Beg, Shaktibala Dutta, Amit Varma, Ravi Kant, Shalu Bawa, Mohammad Anjoom, Saubhagya Sindhu, Santosh Kumar. Study on drug prescribing pattern in hypertensive patients in a tertiary care teaching hospital at Dehradun, UttarakhandInt J Med Sci Public Health., 2014; 3(8): 922-926.
9. Sheron Joseph, Neethu Varghese, Levin Thomas. A study on prescribing pattern of anti hypertensive medications in a tertiary care hospital in Malabar region Der Pharmacia Lettre, 2014; 6(4): 132-137.

10. Kuchake VG, Maheshwari OD, Surana SJ, Patil PH, Dighore PN. Prescription Pattern of Antihypertensive Drugs in Uncomplicated Hypertensive Patients at Teaching Hospital. Indian Journal of Pharmacy practice, 2009; 2(2): 74-80.
11. Clement YN, S Ali, S Harripaul Singh, K Lacaille, O Mohammed, S Mohammed, T Ragbir, E Ramirez, KT shiamo. Drug prescribing for hypertension at primary health care facilities in Trinidad. West Indian med. Jr., Jan. 2012; 61(1): 1-5.
12. Anand Kale, Yasmeen A. Maniyar, Prescribing Patterns of Antihypertensive Drugs in A Tertiary Care Hospital, Sch. Acad. J. Pharm., 2013; 2(5): 416-418.
13. Janagani T, R. Kavitha, S. A. Sridevi, V. Veerendra. Prescription Pattern of Anti Hypertensive Drugs used in Hypertensive Patients with Associated Type2 Diabetes Mellitus in A Tertiary Care Hospital, International Journal of Pharma Research & Review, Jan 2014; 3(1): 1-5.
14. Popuri Rupa Sindhu, Malladi Srinivas Reddy. Study of Prescriptive Patterns of Antihypertensive Drugs in South India International Journal of Advancements in Research & Technology, June-2013; 2(6): 295-311.
15. Arshad H Mohd, Uday V Mateti, Venkateswarlu Konuru, Mihir Y Parmar[1], Buchi R Kunduru. A study on prescribing patterns of antihypertensives in geriatric patients., April 2012; 3(4): 139-142.