The Professional Medical Journal
www.theprofesional.com

DOI: 10.17957/TPMJ/16.3523

ORIGINAL PROF-3523

HYPERTENSION;

STRATEGIC NEED TO CONTROL RISK FACTORS AND DRUG RATIONALIZATION, A CROSS SECTIONAL DESCRIPTIVE STUDY

humali80@live.com

Dr. Shazia Alam[1], Dr. Huma Ali[2], Dr. Farya Zafar[3], Dr. Rabia Bushra[4], Dr. Maqsood Ahmed[5]

1. B. Pharm, M. Pharm, Ph.D.
Assistant Professor,
Department of Pharmaceutics,
Faculty of Pharmacy,
Ziauddin University, Karachi.
2. B. Pharm, Pharm. D, M. Phil, Ph.D.
Associate Professor,
Department of Pharmaceutics,
Faculty of Pharmacy,
Jinnah Sindh Medical University, Karachi.
3. B.Pharm, Pharm.D, M.Phil, Ph.D.
Associate Professor,
Department of Pharmaceutics,
Faculty of Pharmacy,
University of Karachi, Karachi.
4. B.Pharm, Pharm.D, M.Phil, Ph.D.
Associate Professor,
Department of Pharmaceutics,
Faculty of Pharmacy,
Dow University of Health Sciences, Karachi.
5. B. Pharm, M. Pharm, Ph.D.
Assistant Professor,
Department of Pharmaceutics,
Faculty of Pharmacy,
Ziauddin University, Karachi.

Correspondence Address:
Dr. Huma Ali
B. Pharm, M. Phil, Ph.D.
Associate Professor,
Department of Pharmaceutics,
Jinnah Sindh Medical University, Karachi.
humali80@live.com

Article received on:
11/07/2016
Accepted for publication:
15/10/2016
Received after proof reading:
00/00/2016

ABSTRACT… Objectives: The study aim was to analyze the awareness of hypertension, life style changes, treatment compliance and drug utilization of antihypertensive drugs among HTN patients. **Study Design:** The prospective study. **Setting:** Cardiology Section of a Tertiary Care Private Hospital, Karachi, Pakistan. **Period**: Six months. **Methods:** Approximately 243 HTN patients were enrolled. Patient's history, demographic descriptions and antihypertensive treatment were recorded through medical profiles. The descriptive statistical data was analyzed with Statistical Package for Social Sciences (SPSS-20). **Results:** Out of 243 patients, majority were male (56.8%) with mean age of 59 years. Smoking and physical inactivity (39.5% and 28.8%) were found the two leading environmental risk factors associated to hypertension. Majority of patients were still untreated (53.9%) and only (19.8%) patients treated appropriately. The reasons obtained behind included poor compliance (48.1%) against antihypertensive medicines, less awareness of HTN (23.9%) than unawareness (76.1%) and lack of clinical visits in relation to financial problems (25.1%, 26.7%). Antihypertensive drugs utilized were β-blockers (28%), ACE inhibitors (25.1%), CCBs (20.6%) followed by ARBs (19.8%) and diuretics (6.6%). **Conclusion:** Hypertension can be overcome by advancement of knowledge, health educational programs, promoting awareness of early recognition and treatment protocol.

Key words: Hypertension, Life style modification, awareness, treatment compliance, drug utilization, antihypertensive drugs.

Article Citation: Alam S, Ali H, Zafar F, Bushra R, Ahmed M. Hypertension; strategic need to control risk factors and drug rationalization, a cross sectional descriptive study. Professional Med J 2016;23(12):1449-1454. **DOI:** 10.17957/TPMJ/16.3523

INTRODUCTION

Worldwide, hypertension (HTN) recognized as highly perilous disorder attributed with greater risk for cardiovascular mortality and morbidity. It is poorly controlled because majority of people tend to ignore the health related hazards. Current estimation on HTN shows 1.56 billion adults will suffer in 2025 means 1 out of 3 adults.[1] The HTN prevalence has been reported by various countries around the globe. The substantial prevalence of HTN found in Poland (68.9%) men and (72.5%) women[2] compared to (23.6%) males to (21.71%) females in Bangladesh.[3] The progressive community issues of HTN was lesser in Canada (19·5%) than in the United States (29%) and United Kingdom (30%). However, privileged of awareness was (81%) in the USA and (83%) in Canada than (65%) in UK.[4] A study reported that only 44.7% individuals know about their high blood pressure and only 28.2% were taking antihypertensive medicines.[5] According to National Health Survey of Pakistan (NHSP) more than 70% patients are unaware about HTN. NHSP estimated that HTN affects almost 33% of adults above 45 years old whereas at the age of 60 years and older, the risk became equivalent in men and women (50.8% 51%). It was also stated that just 50% of individuals well diagnosed with HTN and only 12.5% of hypertension cases were adequately controlled.[6] The available report of a population survey done by the National Institute of Cardiovascular Diseases (NICVD) in Karachi also ranked the significant frequency of HTN among general public of Pakistan.[7] The common environmental factors like smoking, stress, physical immobility and high sodium intake are examples of unhealthy life style.[8] Similarly lack of knowledge, non-compliance towards treatment plan, failure of follow ups, monetary constraints, and deprived access to

quality health care hospitals and to approach the practitioners of primary care is the important key factors associated with untreated HTN. The findings of a survey showed that 77.5% of the respondents complied with keeping their follow-up clinic appointments whereas 41.5% had poor compliance to take their medication and 6.8% patients reported their financial problems.[15] One of study revealed 72% lack of clinical visits and 56% patients experienced lack of awareness for HTN.[22] If not well treated; it may lead to loss of vision, cardiac failure, kidney malfunction, heart attack or stroke. In United State 2010, American Heart Association (AHA) reported the death rates of untreated HTN cases (45% male vs 55% females).[9] Evidence based recommendations and guidelines provide a substitute clinical judgment for health care professionals but the clinical characteristics and circumstances of each individual must be carefully consider. Similarly, patients must assure that adequate management of HTN may reduce their disease burden. Health prescribers need to evaluate prospective and retrospective trials in the management of data about prescribing medicines to monitor clinical safety and promote patient care.[10] Clinical evidence suggests antihypertensive drug treatment remains one of important preventable contributor to disease and death, reduces the cardiac risks of myocardial infarction (MI), stroke, heart failure, revascularization procedures and last-stage renal dysfunction in hypertensive patients. Anti-hypertensive therapies such as angiotensin converting enzyme (ACE) inhibitors, calcium channel blockers (CCBs), angiotensin receptor blockers (ARBs), β-blockers, and diuretics are satisfactory choice in patients with hypertension.[11] β-blockers remains a standard drug in patients who have cardiac history of HTN and angina while CCBs produces equivalent effects to β-blockers in primary prevention. However ACE inhibitors are usually preferred to reduce initial whereas ARBs reduces severity of ischemic heart disease (IHD) events.

MATERIAL AND METHOD

Study design and settings

The prospective survey based study was conducted in a tertiary care private hospital, Karachi within duration of 180 days and the purpose of study was to examine the awareness of hypertension, life style changes, treatment protocol and drug utilization of antihypertensive drugs in HTN patients.

Ethical Approval

The research work was approved from Institutional ethical committee prior to carry out study.

Data Collection

Approximately 243 patients were recruited during six months of study period who fulfilled the inclusion criteria. The data was collected by reviewing the medical profiles of all cardiac patients who admitted in the cardiology wards during the study course. The purpose was to determine the study variables such as environmental risk factors, health related risk factors /co-morbidities, disease state, reason of uncontrolled hypertension and hypertension treatment status and prescription pattern of antihypertensive drugs. Detail data of drugs collected by their brand or generic names and then classified according to their drug categories.

Statistical Analysis

The descriptive statistical data was analyzed using Statistical Package for Social Sciences (SPSS) Version 20. The results were interpreted through percentages and frequencies charts.

RESULTS

Hypertension (HTN) is a growing community health problem and middle aged people of both genders are at potential risk of coronary events. Out of 243 patients, (56.8%) were male and (43.2%) were female. A large number of patients had age group of 51-60 years (44.4%) with the mean age of 59 years [Standard deviation (SD) = 8.9]. Smoking and lack of physical activity (39.5% and 28.8%) were two leading environmental risk factors associated with hypertension in comparison to excessive salt intake (18.9%). However, majority of patients have cardiac history 40.7% with co-morbidities of diabetes mellitus and hypercholesterolemia (22.2% and 24.3%)

respectively. In our study, HTN awareness of patients found lesser (23.9%) than unawareness (76.1%). Furthermore, poor compliance for prescribed medications was higher (48.1%) among individuals resulting uncontrolled HTN. Significant association between awareness and non-compliance for treatment has been also noticed (P = 0.001). Majority of patients were still untreated (53.9%) and only (19.8%) patients treated appropriately. However, results showed similarity among lack of clinical visits in relation to financial problems (25.1%, 26.7%). Concerning prescribing pattern of antihypertensive drugs, β-blockers (28%), ACE inhibitors (25.1%), CCBs (20.6%) are usually prescribed followed by ARBs (19.8%) and diuretics (6.6%).

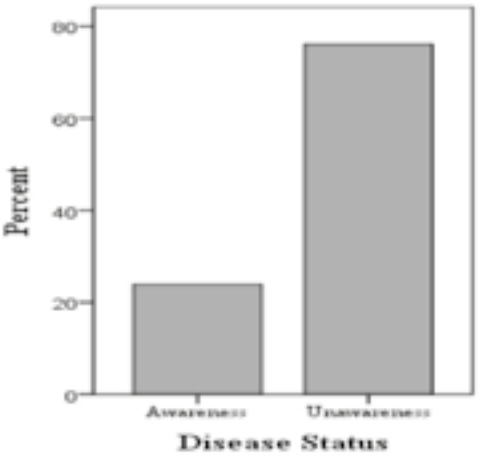


Figure-3. Disease Status associated to HTN

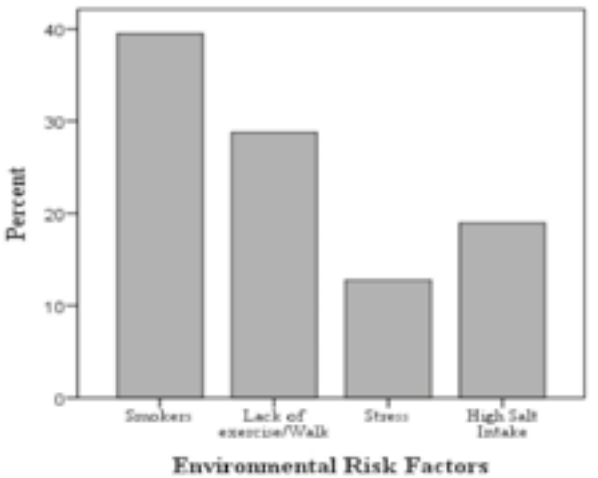


Figure-1. Environmental Risk Factors associated to HTN

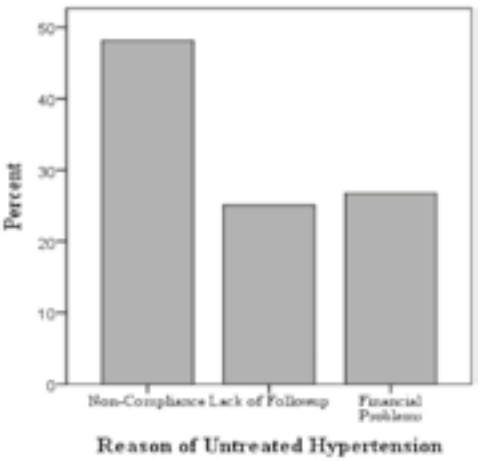


Figure-4. Reasons of Untreated HTN

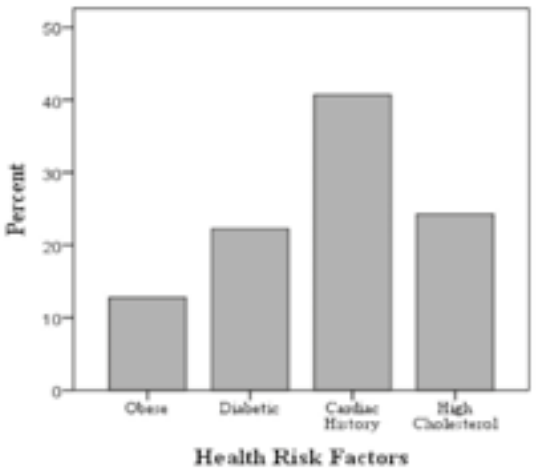


Figure-2. Health Risk Factors associated to HTN

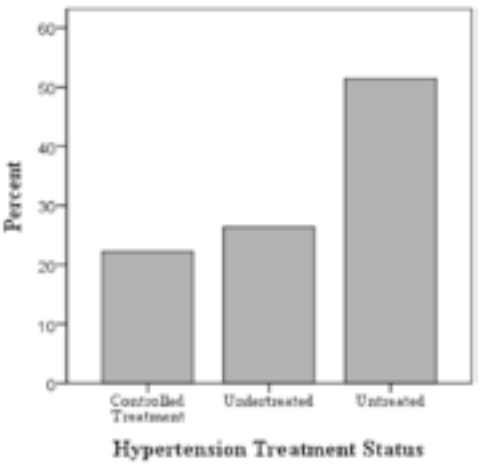


Figure-5. HTN Treatment Status

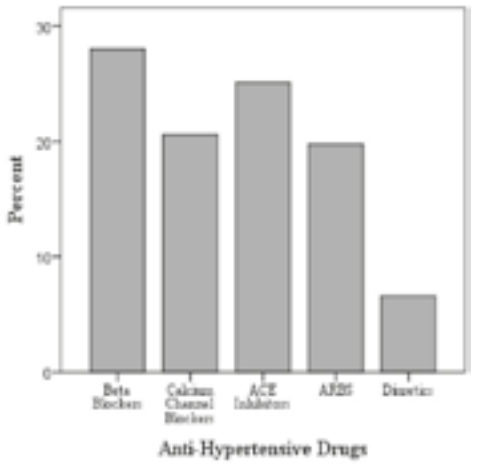


Figure-6. Drug Utilization of Anti-hypertensive Drugs

DISCUSSION

Hypertension is a significant public health challenge together in economically developed and underdeveloped states. In our country, people normally visit the clinics when they suffered from complications because of unchecked and untreated disease condition. Most of HTN patients are unaware of their situation and those with diagnosed HTN, treatment are usually improper. Allied health care professionals, family physicians, cardiologist and systems across the nation are focusing on controlling BP. Various studies and guidelines suggested the realistic medication strategy in management of HTN and ensure the quality of medical standards. Virdis et al demonstrated that HTN smokers have more chances to develop malignant and severe renovascular hypertension.[12] American Heart Association (AHA)/American College of Cardiology (ACC) recognized various systemic reviews and meta- analysis concerning changing life style pattern. Preventive measurement of physical activity /walk in daily routine may substantially lower the cardiac events and particularly risk of type 2 diabetes. In addition, many observational studies provided facts to determine effects of less consumption of dietary salt on improved health outcomes.[13] Likewise, the highest quality dietary patterns are recommended to control the BP and blood cholesterol to make healthy heart. Several epidemiologic investigations have documented stress, over weight and diabetes as the most important risk factor for HTN. In United State, HTN occurs in about 30% and 80% of type I and II diabetes.[8] Patients non compliance towards anti hypertensive therapeutic plan was a main failure to control HTN and numerous studies showed inadequate treatment in about half of HTN patients.[14] Approximately 49.7% patients were non-compliance for prescribed antihypertensive therapy and only 19.9% patients received controlled treatment in our study. It has been noticed about 50% of individuals discontinue to complete treatment within one year. Such uncontrolled HTN contributed more than 500,000 events of stroke and 1 million myocardial (MI) annually in US.[15] A significant decline of 2 mm Hg in blood pressure may decrease the threat of stroke and cardiac disorders up to 15% and 6% in specified inhabitants. Consequently, admittance towards anti-hypertensive therapy and satisfactory compliance are necessary elements to monitor hypertension. A research conducted in Malaysia stated the use of β-blockers (45%) followed by calcium channel blockers (25%).[16] A considerable use of diuretics (23 %), (2%), (15.4%), β-blockers (57 %), ACEIs (31 %), (11%), (30.1%) and ARBs (100 %) was noticed by researches.[17,24,25] Investigation of drug utilization on β-blockers was reported (42%) (57%), (62%), (67%), (2.8%), (20.6%) by various scientific researches.[18,17,19,20,24,25] Similarly different clinical trials described the drug utilization of ARBs (51.8%), (21%), (24.8%), (14%) and calcium channel blockers (33.3%), (38.9%) (37%), (19.4%), (17.9%) in hypertension management.[20,21,23,24,25] At present, increased availability and drug utilization of various antihypertensive therapy even in combination may provide effective and sustain long term benefits and are highly consistent in reducing fatal coronary events. In future, more work is needed to understand barriers towards better control and community health care system must facilitate essential strategies for attaining HTN management among population.

CONCLUSION

Allied health care professionals have a leadership role in primary and secondary health concern systems. The successful clinical management

of hypertension in early stage largely dependent on life style modifications concerning physical activity, patient awareness and smoking control as a basic step towards part of prevention. A good perception and enhance compliance of HTN patients with the therapeutic regimen are necessary to improve their quality of life.

REFERENCES

1. **World Health Organization (WHO). A global brief on hypertension.** Available at: http://www.who.int/cardiovascular_diseases/publications/global_brief_hypertension/en/. Accessed on: 02 Jan 2015.

2. Kearney PM, Whelton M, Reynolds K, Whelton PK, He J. **Worldwide prevalence of hypertension: a systematic review.** J Hypertens. 2004; 22 (1):11-9.

3. Islam SM, Mainuddin A, Islam MS, Karim MA, Mou SZ, Arefin S, Chowdhury KN. **Prevalence of risk factors for hypertension: A cross-sectional study in an urban area of Bangladesh**. Glob Cardiol Sci Pract. 2015; (4): 43.

4. Michel Joffres, Emanuela Falaschetti, Cathleen Gillespie, Cynthia Robitaille, Fleetwood Loustalot, Neil Poulter. **Hypertension prevalence, awareness, treatment and control in national surveys from England, the USA and Canada, and correlation with stroke and ischemic heart disease mortality: a cross-sectional study.** BMJ Open 2013; 3.

5. Gu D, Reynolds K, Wu X, Chen J, Duan X, Muntner P, Huang G, Reynolds RF, Su S, Whelton PK. **Prevalence, awareness, treatment, and control of hypertension in china.** Hypertension. 2002; 40 (6): 920-7.

6. Fahad Saleem, Azmi Ahmad Hassali, Asrul Akmal Shafie. **Hypertension in Pakistan: time to take some serious action.** Br J Gen Pract. 2010; 60 (575): 449–50.

7. Azhar Faruqui. **Hypertension in Pakistan: What aware going to do about it?** Pakistan Heart Journal 1997; Vol 30, No 3-4.

8. Bernard M. Y. Cheung and Chao Li. **Diabetes and Hypertension: Is There a Common Metabolic Pathway?** Curr Atheroscler Rep. 2012; 14(2): 160–66.

9. **American Heart Association Statistical Fact Sheet on High Blood Pressure** 2014.

10. Fahimi F, Baniasadi S, Behzadnia N, Varahram F and Tabatabaie LG**. An observational prospective study in medical inpatients.** Iranian Journal of Phrmaceutical Research, 2008; 7 (1): 77-82.

11. James PA, Oparil S, Carter BL, Eighth Joint National Committee (JNC 8) Members, et al. **2014 evidence-based guideline for the management of high blood pressure in adults: report from the panel members appointed to the Eighth Joint National Committee (JNC 8), Supplemental Content.** JAMA. 2014; 311(5):507–20.

12. Virdis A, Giannarelli C, Neves MF, Taddei S, Ghiadoni L**. Cigarette smoking and hypertension.** Curr Pharm Des. 2010; 16 (23): 2518-25.

13. Robert H. Eckel, John M. Jakicic, Jamy D. Ard, Janet M. de Jesus, Nancy Houston Miller, Van S. Hubbard, et al. **2013 AHA/ACC Guideline on Lifestyle Management to Reduce Cardiovascular RiskA Report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines**. *J Am Coll Cardiol.* 2014; 63(25).

14. Philip S Wang, Rhonda L Bohn, Eric Knight, Robert J Glynn, Helen Mogun, and Jerry Avorn, M. Noncompliance with Antihypertensive Medications. **The Impact of Depressive Symptoms and Psychosocial Factors.** J Gen Intern Med. 2002; 17(7): 504–11.

15. Pauline E. Osamor and Bernard E. Owumi. **Factors Associated with Treatment Compliance in Hypertension in Southwest Nigeria**. J Health Popul Nutr. 2011; 29 (6): 619–28.

16. Heethal Jaiprakash, Vinotini K, Vindiya, Vsalni, Vikneshwara, Vigneswaran, Vinosha, Voon C. Min. **Drug utilization study of antihypertensive drugs in a clinic in Malaysia.** Int J Basic Clin Pharmacol. 2013; 2 (4): 407-10.

17. Gu Q, Burt VL, Dillon CF, Yoon S. **Trends in antihypertensive medication use and blood pressure control among United States adults with hypertension: The National Health and Nutrition Examination Survey, 2001 to 2010.** Circulation. 2012; 126 (17): 2105–14.

18. Spiese A, Roos M, Frisullo R, Stocker D, Braunschweig S, Follth F, Meier PJ, Fattinger K. **Cardiovascular drug utilization and its determinants in unselected medical patients with ischemic heart disease**. Eur J Inter Med. 2002; 13 (1): 57-64.

19. Stone PH, Thompson B, Anderson HV, et al. **Influence of race, sex and age on management of unstable angina and non-Q-wave myocardial infarction; the TIMI III registry.** JAMA 1996; 275: 1104-12.

20. Lee HY, Cooke CE, Robertson TA. **Use of secondary prevention therapy in patients with acute coronary syndrome after hospital discharge.** J Mang Care Pharm 2008; 14 (3): 271-80.

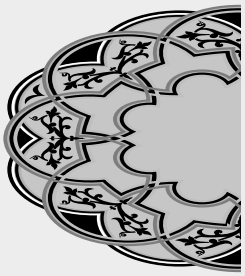
21. Lisauskiene I, Garuoliene K, Gulbinovic J. **Trends and pattern of the utilization of cardiovascular medication in Lithuania in 2003-2012.** Acta Medica Lithuanica 2014; 21 (3): 143-50.

22. Jokisalo E, Kumpusalo E, Enlund H, Takala J. **Patients' perceived problems with hypertension and attitudes towards medical treatment.** J Hum Hypertens. 2001; 15 (11):755-61.

23. Arshad H. Mohd, Uday V. Mateti, Venkateswarlu Konuru, Mihir Y. Parmar, and Buchi R. Kunduru. **A study on prescribing patterns of antihypertensives in geriatric Perspect.** Clin Res. 2012; 3(4): 139–42.

24. Vishal R. Tandon, Sudhaa Sharma, Shagun Mahajan, Annil Mahajan, Vijay Khajuria, Vivek Mahajan, and Chander Prakash. **Antihypertensive drug prescription patterns, rationality, and adherence to Joint National Committee-7 hypertension treatment guidelines among Indian postmenopausal women**. J Mid life Health. 2014; 5 (2): 78–83.

25. Abaci A, Kozan O, Oguz A, Sahin M, Deger N, Senocak H, Topark N, Sur H, Erol C. **Prescribing pattern of antihypertensive drugs in primary care units in Turkey: results from the Turksaha study.** Eur J Clin Pharmacol. 2007; 63(4):397-402.



"Courage is knowing what not fear"

Napoleon Bonaparte

AUTHORSHIP AND CONTRIBUTION DECLARATION

Sr. #	Author-s Full Name	Contribution to the paper	Author=s Signature
1	Dr. Shazia Alam	Concept and write-up	
2	Dr. Huma Ali	Data acquisition and setting	
3	Dr. Farya Zafar	Compilation of data	
4	Dr. Rabia Bushra	Data collection	
5	Dr. Maqsood Ahmed	Statistical analysis	