PRESCRIBER ADHERENCE TO STANDARD TREATMENT GUIDELINES FOR THE MANAGEMENT OF HYPERTENSION. A REVIEW OF LITERATURE

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ABSTRACT

Although effective pharmacological treatments for the management and control of hypertension are available, yet the prevalence of hypertension remains high coupled with its poor control worldwide. Lack of adherence of prescribers to existing guidelines for the management of hypertension, is contributing as one of the major factor to the poor control of the disease. However, in some of the countries different barriers to adherence of prescribers with standard treatment guidelines have been identified and addressed with proper interventions which have lead to improved control of hypertension. The purpose of this review paper was to explore adherence of prescribers to various international guidelines available for the treatment of hypertension in developed and developing countries as well as in Pakistan. A total of 63 studies were reviewed regarding prescriber's adherence to standard treatment guidelines, 51 were from developed countries, nine studies were from developing countries and three were from Pakistan. It was concluded that extensive research has been conducted in developed countries regarding availability, perceptions, acceptance and adherence of prescribers to internationally available standard treatment guidelines for management of hypertension and barriers to adherence which has led to improved control of hypertension in these countries. On the other hand, in developing countries including Pakistan limited data is available in this regard. All stakeholders must work together to design strategies that can improve rational prescribing and adherence of prescribers to standard treatment guidelines for appropriate control of hypertension.

KEYWORDS: Hypertension, Perceptions, Acceptance and Adherence of Prescribers

INTRODUCTION

Hypertension has been identified as one of the three risk factors contributing towards global burden of disease. It is estimated that approximately 7.5 million deaths worldwide are due to hypertension which constitutes about thirteen percent of the total of all deaths [1]. Hypertension affects relatively more of population of lower and middle income countries [2]. It is also estimated that two thirds of hypertensive patients are from developing countries, moreover, other heart diseases and stroke is estimated to be more prevalent in younger people as a consequence of high prevalence of hypertension [2].Hypertension is also considered one of the most prevalent cardiovascular disorder in developed countries affecting twenty to fifty percent of the adult population [3]. In 2009, the prevalence of total hypertensive population in United States, was approximately was almost thirty eight percent of the men and forty percent of the women [4]. Hypertension treatment and control was estimated in five European countries (Germany, Sweden, England, Spain, Italy), Canada, and the United States by using sample surveys conducted in the 1990s [5]. More than fifty percent of the

hypertensive patients in the United States had their blood pressure controlled at 160/95 mm Hg, compared with around fifty percent in Canada and less than fifty percent in Europe. Similarly, twenty nine percent of hypertensive patients in the United States, blood pressure was observed at threshold value of 140/90 mm Hg, while seventeen percent of the patients in Canada and ten percent in European countries had their blood pressure controlled at threshold value of 140/90 mm Hg [5]. According to the National Health and Nutrition examination survey (NHANES) criteria the overall prevalence rate for hypertension in Germany was above fifty percent and treatment and control rates were fifty six percent [6]. A community based cross sectional study in Gondar, Northwest Ethiopia indicated high prevalence of hypertension and highlighted the need of community based screening programs to control the hidden epidemic of hypertension in the community [7]. Similarly high prevalence of hypertension among the Iranian adult population was reported [8].

Patterns of prevalence, awareness and control of hypertension among elderly in low and middle income countries including China, Ghana, India, Mexico, the Russian Federation and South Africa were studied [9]. Low awareness regarding hypertension and increasing age, gender, obesity and socioeconomic status were associated with effective control of hypertension whereas obesity was associated with poor control [9]. An analytic cross sectional study conducted at three hospitals in Mazowe district of Mashonaland, Zimbabwe reported higher prevalence of hypertension and comparatively lower awareness, control, compliance and complication rate of hypertension [10]. An elderly population based prospective cohort study conducted in Brazil revealed that discontinuation of anti-hypertensive drugs increased cardiovascular mortality risk in community dwelling elderly [11].

Many hypertensive patients with a coexisting condition such as diabetes or chronic kidney disease fail to achieve blood pressure goals according to international guidelines [12]. A study based on blood pressure goals achievement according to Joint National Commission 7 (JNC 7) guidelines in type 1 and type 2 diabetes patients revealed that more than half of patients with diabetes also had hypertension while majority of the diabetic patients did not have controlled blood pressure according to JNC 7 recommendations [13]. In a study conducted in Spain reported that hypertensive patients having high cardiovascular risk diagnosed with depression had better control of blood pressure [14]. The purpose of this review paper was to explore adherence of prescribers to various international guidelines available for the treatment of hypertension in developed and developing countries as well as in Pakistan.

METHODOLOGY

The electronic databases Pub Med, Google Scholar and Science direct were searched for articles published from 2000 to 2014. The search terms used were prescriber adherence, hypertension, and treatment guidelines. Full research papers and abstracts were searched and included in this review. A total of 63 studies were included in this review. Fifty one studies were from developed countries and nine were from developing countries whereas only three studies were from Pakistan regarding adherence of prescribers to treatment guidelines for the management of hypertension (Table 1).

Table 1

Regions	Number of Studies	Countries
Developed Countries	51	California, Cyprus, Finland, Germany, Greece, Ireland, Italy, Netherlands, Norway, Portugal, Sweden, UK and USA
Developing Countries	9	Africa, China, India, Malaysia and Nigeria
Pakistan	3	---
Total		**63**

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RESULTS & DISCUSSIONS

Guidelines available worldwide for the screening, diagnosis, treatment and control of hypertension include those from American and international societies namely the American Heart Association (AHA), American College of Cardiology (ACC) and the US Center for Disease Control and Prevention (CDC); the panel appointed to the Eighth Joint National Committee (JNC 8); the European Societies of Hypertension and Cardiology (ESHC); the French Society of Hypertension; the Canadian Hypertension Education Program(CHEP); the National Institute for Health and Clinical Excellence (NICE) UK; the Taiwan Society of Cardiology and the Chinese Hypertension League [15] [16]. A good agreement was found between these guidelines generally with slight discrepancies in some areas such as target blood pressure ranges in elderly [15]. International guidelines were found to be based generally on seeking the same goals and were proved similar in their effectiveness [17].

Prescriber's Adherence to International Guidelines in Developed Countries

A case study on Sixth Joint National Committee's (JNC 6) guidelines evaluated the relationship between generalizability of guidelines on hypertension and adherence of physician to these guidelines recommendations for the management of hypertension [18]. Physicians' adherence was found to be weakly associated with generalizability of guidelines while poor adherence to these guidelines was reported which was attributed to the failure of physicians to completely consider clinical characteristics of the patients [18]. Another such study highlighting the need for intensification of therapy in hypertensive patients and evaluating determinants of JNC 6 compared JNC adherence, blood pressure control and intensification of therapy on the basis of patient characteristics reported more frequent adherence to JNC guidelines among blacks and Hispanics than whites. However, blood pressure was controlled more often among whites while blacks and whites were more likely to have their therapy intensified than Hispanics [19]. Therapy intensification was found to be associated with better blood pressure control in all racial/ethnic groups [19]. In a study on implementation of the new guidelines for hypertension including JNC 7, American Diabetes Association (ADA), World Health Organization/International Society of Hypertension (WHO/ISH) the role of clinical pharmacist was reported in terms of better implementation and adherence to these guidelines [20].

In an internet questionnaire survey aimed at exploring awareness of general practitioners about current hypertension guidelines and their implementation in clinical practice, it was found that most of general practitioners were aware of the guidelines but only few of them were adhering to these guidelines [21]. It was also reported that most of the general practitioners did not adhere to the recommended guidelines as they disagree with them even if they are given financial incentives, however, high adherence might be achieved on the basis of scientific evidence [21]. In another study Irish prescribing database identified patients initiating antihypertensive monotherapy were used to determine adherence to hypertension guidelines in relation to age, diabetes, choice of first antihypertensive and if the existing guidelines were ignored [22]. Diabetics were more likely to receive antihypertensive therapy other than beta-blockers than non-diabetics while little adherence to the guidelines in relation to age was found but it was evident that diabetics were prescribed with selective class of anti-hypertensive drugs [22]. Adherence to JNC 7 guidelines was evaluated among nursing home patients in a survey which used data from 2004 National Nursing Home Survey (NNHS) [23]. The overall adherence to hypertension guidelines among nursing home patients was found low moreover it was suggested that in order to improve patient outcomes and reduce cost prescribing of thiazide diuretic must be encouraged [23].

In a retrospective, time series analysis of twenty seven provider groups and managed care organizations from 1998 till 2006, blood pressure control and pharmacotherapy patterns in the United States were analyzed before and after the release of the Joint National committee on the prevention, detection, evaluation, and treatment of high blood pressure (JNC 7) guidelines [24]. Improvement in the overall control of blood pressure was reported but significant need for further improvement to control burden of cardiovascular disease was highlighted [24]. Association between ALLHAT/JNC 7 academic detailing activities and increased prescribing of thiazide diuretics along with emphasis on academic detailing can increase implementation of clinical trial results by prescribers thus making prescribing more consistent with evidence were reported [25]. Failing to assess cardiovascular risk factor profile may be the reason of under-treatment or over treatment regarding current guidelines for management of hypertension [26]. Clinicians tend to overestimate their adherence to medication recommendations and blood pressure targets therefore the barrier to successful implementation of guidelines might be limited awareness that could be managed using provider profiles and feedback to clinicians [27]. women were more likely to receive guideline adherent therapy than men in England [28].

A clear and contained evaluation of physician adherence to the Seventh Report of the Joint National Committee on prevention, detection, evaluation, and treatment of high blood pressure (JNC 7) hypertension guidelines in six community based clinics was conducted [29]. Results indicated that the adherence to the JNC 7 guidelines was low [29]. In a national multicenter prospective observational study conducted between November 2007 and June 2008 in Cyprus perceptions of prescribers and their adherence to European guidelines for the management of hypertension were investigated [30]. It was concluded that more than twenty five percent of high risk hypertensive patients remained untreated and forty percent of low risk patients received medication inappropriately, besides physicians declaring that they were aware of the clinical guidelines for the management of hypertension [30]. Blood pressure goal attainment according to JNC 7 guidelines and utilization of antihypertensive drug therapy in managed care organization patients with type 1 or type 2 diabetes was determined in United States [13]. It was concluded that application of JNC 7 guidelines significantly reduced the proportion of diabetic patients at target blood pressure goal [13]. Another such study assessing comparative effectiveness of guidelines for the management of hyperlipidemia and hypertension for diabetic patients indicated that Australian guidelines result in highest whereas US guidelines result in lowest expected costs [17]. Although, international guidelines were based on same evidence and were similar in their effectiveness seeking same goals but there were great variations in the expected medication costs [17].

Effect of physical activity on controlling blood pressure among hypertensive patients, in Kuwait reported that more than half of the patients included in the study had uncontrolled hypertension who were not practicing physical activity as compared to a quarter of those who were practicing it, thus it was suggested that general practitioners must advise physical exercise and patients must be followed in order to adhere to the complete treatment plan [31]. Another important aspect of evidence based guidelines is identification and management of risk factor to slow down the progression of disease [32]. Hypertension and diabetes were recorded in ninety percent of patient records, however dyslipidemia and smoking which are considered most important reversible risk factors for cardiac disease were reported in eighty percent of the cases in a study conducted on Ontario. Physician chart report may not be the standard for quality assessment in cardiac risk factor reporting [33].

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Prescriber's Adherence to International Guidelines in Developing Countries

Prescription pattern of antihypertensive drugs its possible effects on blood pressure control and compliance of physicians with recommended guidelines were assessed in Nigeria [34]. Most frequently prescribed antihypertensive drug was diuretic both as a single agent and as combination therapy however mean reductions in both systolic and diastolic blood pressures were observed more in patients on calcium channel blocker monotherapy and, in patients on combination therapy than those only on monotherapy [34]. Better control of blood through the use of calcium channel blocker was evident from this study [34]. The role of physicians in the overall management of hypertension and their adherence to the JNC 7, WHO/ISH and European Society of Hypertension (ESH) guidelines were also examined in Nigeria [35]. Grade 2 category of hypertension was found to be highly prevalent, proportion of hypertensive women was higher than hypertensive men and the most common comorbidity was found to be diabetes mellitus [35]. Compliance of prescription pattern to the stated guidelines was good however lifestyle modifications were not recommended to hypertensive patients [35].

On the other hand, adherence to the guideline for hypertension was good and slightly decreased in the case of coexisting co-morbidity such as diabetes mellitus in Malaysia [36]. Class of antihypertensive drug which was found to be of lowest cost was diuretics and the one with highest cost was angiotensin-receptor blocker. The use of diuretic was suggested to be encouraged as it was found cost effective for patients [36]. A prospective cross sectional study conducted in India evaluated prescription patterns of antihypertensive drugs, rationality, and adherence to Joint National Committee 7 hypertension treatment guidelines among Indian postmenopausal women [37]. Results indicated better adherence of antihypertensive prescription trends to existing guidelines and high rationality, however, a few prescriptions with polypharmacy, generic fixed dose combinations were considered irrational [37].

A study conducted in Korea assessed association of adherence to the seventh report of the Joint National Committee guidelines with hypertension [38]. An inverse association between adherence to the JNC 7 guidelines and hypertension prevalence among Korean adults was found which highlighted the importance of lifestyle modification for the prevention and management of hypertension [38]. A questionnaire survey was conducted in Xuhui district, Shanghai in order to explore hypertension knowledge and training needs of general practitioners [39]. Poor patient compliance, lack of medical consultation time and inadequate knowledge of general practitioners were identified as major difficulties in health education practice for prevention of hypertension [39]. Health care practitioners working at community clinics where they participate in a series of teaching, assessing and evaluating systems for hypertension prevention tend to offer better performance than those in general healthcare centers who lack specific training [39].

Assessment of total cardiovascular risk was carried out using WHO/ISH risk prediction charts in three low and middle income countries in Asia namely Cambodia, Malaysia and Mongolia [40]. Data which was used in this study was taken from national STEPS surveys (STEP Wise Approach to Surveillance) conducted between 2005 and 2010 in of men and women aged 40–64 years in order to compare the differences and implications of various approaches to risk estimation at a population level using the World Health Organization/International Society of Hypertension (WHO/ISH) risk score charts [40]. Cardiovascular risk scores offer useful insights that can assist health service delivery planning if used on a population level while at the individual level, an estimation of the total risk may offers important clinical benefits. Appropriate clinical guidelines and operational guidance for detection and management of cardiovascular disease risk must

be developed [40]. A prospective observational study evaluated rationality in prescribing, adherence to treatment guidelines, and direct cost of treatment in intensive cardiac care unit [41]. Among important findings of the study hypertension was found to be most common co-morbid condition and high number of drugs per encounter contributed to the higher cost of pharmacotherapy while in majority of the cases ACC/AHA guidelines were followed [41].

Poor knowledge of health workers and health service factors were indicated as main reasons for poor diagnosis and management of hypertension. Training of health workers on diagnosis and management of hypertension, availability of guidelines, digital sphygmomanometers and adequate drug supply should be improved [10].

Prescriber's Adherence to Standard Treatment Guidelines in Pakistan

Non communicable diseases are estimated to account for around fifty percent deaths in Pakistan among which cardiovascular diseases are one of the major contributors [42] The prevalence of hypertension in 2008, in males was approximately twenty six percent and about twenty five percent in females [42].

A cross sectional survey of general practitioners from urban areas in Pakistan aimed to determine whether general practitioners' approach to high blood pressure is in accordance with international guidelines [43]. Most of the general practitioners were found using incorrect blood pressure cut offs for diagnosis of hypertension in patients of sixty years or above while appropriate therapy for hypertension in the elderly was initiated only by less than forty percent of the general practitioners [43]. The use of sedatives either alone or in combination with antihypertensive agents as first line medication for lowering BP was reported while thiazide diuretics were rarely prescribed. A national survey of the cardiologists practicing in four major cities in Pakistan (Karachi, Lahore, Quetta and Peshawar) in order to assess adherence to the European Society of Cardiology (ESC) guidelines for chronic heart failure in Pakistan [44]. The survey indicated a high proportion of cardiologists who were aware of heart failure guidelines, a few considered ESC guidelines as relevant for guiding treatment decisions while majority of them chose American heart association (AHA) guidelines [44]..

Another study conducted at the Aga Khan University hospital (AKUH) and national institute of cardiovascular diseases, Karachi reported adherence in more than seventy percent of the cases. Aging, better awareness and increased number of prescribed pills significantly improved adherence, however, no association was found with depression [45]. In Pakistan data obtained on prescribing practices of general practitioners suggested that hypertension is under diagnosed and undertreated, especially in the elderly [43]. Initiation of intensive medical education for all physicians involved in the management of patients with hypertension can help in better control of hypertension [43].

CONCLUSIONS

This review paper concluded that although available guidelines for management of hypertension aim at seeking the same therapeutic goals and proved similar in their effectiveness but still adherence to these guidelines by prescribers is inadequate especially in developing counties. Most common barriers to the adherence of these guidelines include lack of consideration of correct blood pressure goals, co-morbid conditions, old age, cardiovascular risk factors and recommendation of life style modification by prescribers. Availability of selected standard treatment guidelines must be ensured in health care facilities by stakeholders and their implementation should be encouraged using educational as well as managerial strategies.

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