Burden, determinants and control of hypertension: a Bhutanese perspective

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Abstract

In its 60 years of pursuing modern developmental goals, Bhutan has done remarkably well. However, the country now faces a triple burden of diseases – communicable diseases, noncommunicable diseases, and accidents and injuries. Among the risk factors for noncommunicable diseases, hypertension is perhaps the most important cause of an increasing number of strokes, heart attacks and chronic kidney diseases in Bhutanese adults. Unfortunately, the proportion of those with hypertension on treatment is small and the proportion of those with both diabetes and hypertension is large. Another unhealthy sign is the large proportion of overweight adults, which is the main driver of noncommunicable diseases, symbolized by a moderately high prevalence of diabetes mellitus. A diet that is high in carbohydrates, fats and salt, in addition to the unhealthy but socially acceptable custom of alcohol use, are responsible for this alarming trend. Increasing consumerism in society has led to a rise in sedentary lifestyles and further increase in salt and fat intake from imported food items. All this does not bode well for the health of the Bhutanese. Comprehensive policies and strategies at both the population and individual levels are needed to meet the challenge posed by the triple burden of diseases. In resource-poor Bhutan, implementation of the World Health Organization (WHO) "best buys" and effective scaling up of the WHO Package of Essential NCD Interventions to all districts holds promise. A robust combined response from both the government and all of society would be needed to overcome these challenges.

Introduction

The Kingdom of Bhutan and its people are experiencing a "pentad of transitions" – demographic, epidemiological, nutritional, economic and political. The country now faces major health challenges in the form of a triple burden of diseases – communicable diseases, noncommunicable diseases (NCDs), and accidents and injuries. Among the NCDs, the silent killer called hypertension is one of the most dangerous risk factors for developing stroke, heart attack and chronic kidney disease. This article discusses the burden, prevention and control of hypertension in Bhutan.

Burden of hypertension in Bhutan

There is a paucity of accurate data on the prevalence of hypertension in Bhutan. Evidence of the burden of hypertension and its costs and consequences to Bhutanese society comes from indirect and, more recently, direct sources. The indirect sources are hospital data based on inpatient admissions in the tertiary hospital in Thimphu, as well as information on the increasing expenditure over the past few years on antihypertensive drugs, both nationally and at the apex hospital. The first

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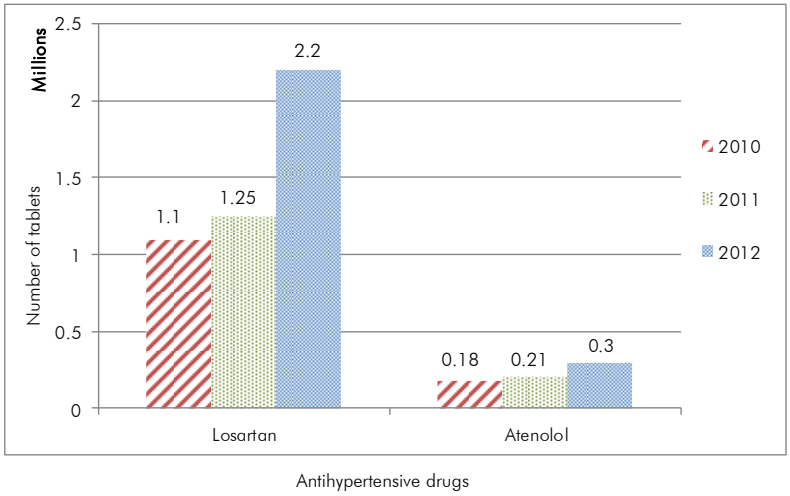
direct evidence is based on the 2007 NCD risk factor survey using the World Health Organization (WHO) STEPs approach, which was carried out in urban Thimphu, the capital of Bhutan.

Bhutan WHO STEPs SURVEY 2007: The survey revealed a 26% prevalence of hypertension (defined as a blood pressure [BP] of 140/90 mmHg or current use of BP-lowering medications) among adults (25–74 years).[1] This is not far from the US prevalence rate of 31%.[2] The prevalence in rural areas is not known at present.

Hospital-based data: These show rapidly increasing usage and expenditure on antihypertensive drugs, plus an increasing number of referrals for cardiovascular disease (CVD), stroke in particular, from the periphery to the centre. The burden of hypertension is increasing fast in both rural and urban Bhutan. Between 2010 and 2012, in the National Referral Hospital in Thimphu, there was a twofold increase in the number of tablets prescribed and issued of certain popular antihypertensive drugs such as losartan and atenolol, from 1.1 million to 2.2 million, and from 0.18 million to 0.3 million, respectively (Figure 1). In 2011, the nation faced acute shortages of various medicines due to lapses in procurement.

***Figure 1.** Increasing trend in the use of antihypertensive drugs (tablets) at the pharmacy of National Referral Hospital, Thimphu*



Hypertension is responsible for a large number of strokes, heart attacks and chronic kidney diseases in Bhutan. The data from the National Referral Hospital clearly show an overwhelming preponderance of strokes compared with acute myocardial infarction. In 2012, the National Referral Hospital admitted 89 patients with stroke as compared with only 12 with acute myocardial infarction. This is typical of the phase of epidemiological transition that Bhutan is undergoing at present. The relatively low number of heart attacks despite all the major risk factors being present in urban Bhutanese society may be due to the relatively low prevalence (6.8%) of smoking in the adult population.

Coexistence with diabetes: An alarming finding of the WHO STEPs survey was the 8.2% prevalence of type 2 diabetes in the same urban population. Because of a set of shared risk factors such as body mass, diet and activity level, hypertension and diabetes mellitus commonly coexist. Among those with type 2 diabetes mellitus, 40%–75% also have hypertension.[3] A survey of the first 100 diabetic patients presenting to the Diabetic Clinic of the National Referral Hospital in January

2013 showed that more than 70% of patients had coexisting hypertension and in 60% of them, the BP was not controlled to the target of <130/80 mmHg (unpublished information). The very high prevalence of hypertension among those with diabetes needs further investigation. What is clear is that an increasing prevalence of diabetes would contribute to the already high burden of hypertension in the non-diabetic population. Added to that is the 52% prevalence of overweight and 12% of obesity. Put together, this is a potent recipe for an NCD epidemic unfolding in the near future.[1] This is definitely not good at this juncture, when the ideals of Gross National Happiness and economic self-sufficiency after 2020 are inspiring the Bhutanese people.

Determinants of hypertension in Bhutan

Some health conditions, as well as lifestyle and genetic factors, can put people at a higher risk for developing hypertension. The most important risk factors for developing this modifiable cardiovascular risk factor are described below.

Excessive salt intake: Even though exact amounts have not been measured, salt intake is probably high among the Bhutanese and may be a major contributor to the burden of hypertension. The traditional national dishes of Bhutan are red rice, *ema datse* (chilli pepper and cheese stew) and *suja* (salted butter tea). Chilli pickles called *ezay* are frequently served as appetizers and are consumed in large quantities. Generally, large amounts of salt are added to both the curry and the pickle or paste. Due to the proven association of high salt intake with both hypertension and gastric carcinoma, it would be helpful and timely to generate data on the levels and patterns of salt intake at the earliest. However, preventive actions should not be withheld for want of data because of the obvious nature of the problem.

Overweight: In addition to the classical rice–*ema datse*–*suja*–*ezay* combination, the Bhutanese diet is rich in meat and poultry, dairy products and grain, and is generally fat-rich and very spicy. In addition, the majority of the population (58.6%) does not fulfil the minimum requirement for health-enhancing physical activity.[4] The number of motor vehicles in Bhutan has risen rapidly in recent years due to a macroeconomic shift in policy of the government towards economic liberalization, privatization and globalization, resulting in a rise of consumerism and easier access to credit. As of June 2012, the number of vehicles stood at 66 430, with Thimphu accounting for 35 490 and Phuentsholing 23 981[4]. The combination of a high carbohydrate intake in the form of thrice-daily rice, salty butter tea and cheese curry, fat-rich meat and poultry dishes, together with an increasingly sedentary lifestyle, especially among urban dwellers, contributes to the high prevalence of overweight in adults. This problem of overweight is likely to be the main driver of the NCD epidemic in Bhutan as well as a major contributor to the burden of hypertension.

Alcohol use: Locally brewed alcohol such as *chang*, a local beer, and *arra*, a spirit distilled from rice, maize, wheat or barley, have been used by the Bhutanese throughout history. It is used in everyday life as well as an effective potion to appease mountain and valley spirits. The prevalence of daily alcohol consumption is the highest in the eastern districts of Bhutan. However, there is a nationwide increase in the prevalence of alcohol use, which is threatening to become a major public health problem by itself. In urban Bhutan, nearly one third of adults drank alcohol in the past 30 days and one third of them drank on four or more days in the past week.[1] Alcohol is the most important "gateway drug" for the youth in Bhutan, who go on to experiment with other, more dangerous substances. Unlike other countries in the Region, tobacco use is much less in Bhutan due to strong regulatory measures.

Rural–urban migration: In Bhutan, the urban migration rate is one of the highest in South Asia, as many people move from rural to urban areas. The report *Overcoming barriers: human mobility and development*[5] argues that migration within and across borders brings many benefits. Economic

benefits aside, there is also the possibility of stress due to adjustment problems related to urban migration, which could result in health problems such as hypertension. These issues have not been well studied in Bhutan. The increasing prevalence of obesity and diabetes in India and in other low- and middle-income countries has been attributed to increased consumption of saturated fats, sugars and sedentary behaviour associated with urbanization and Westernization.[6]

Status of treatment for hypertension in Bhutan

Treating hypertension has been associated with about a 40% reduction in the risk of stroke and about a 15% reduction in the risk of myocardial infarction.[7] Already one in four adults in urban Thimphu (estimated population 100 000) are hypertensive. The proportion of cases on antihypertensive medications is extremely low at 11.6%, which means that only about 3000 cases from an estimated 26 000 are taking antihypertensive medications. Among those taking drugs, the proportion whose BP levels are not controlled is not known. The prevalence of hypertension in rural areas is also not known. Assuming that the prevalence in the remaining 600 000 population of Bhutan is half (13%) that in Thimphu, there would be about 78 000 undiagnosed and untreated cases. The unhappy combination of high prevalence, shockingly low proportion on medications and low-resource setting that exists in Bhutan poses an enormous problem for the health system.

What can be done to reduce and address the problem of hypertension in Bhutan?

In view of the dismal scenario of hypertension in Bhutan, a combination of population- and health facility-based strategies to reduce BP must be implemented on a campaign footing. Evidence-based recommendations of the WHO/International Society of Hypertension (ISH), American Heart Association; the Joint National Committee on the Prevention, Detection, Evaluation, and Treatment of High Blood Pressure; and the U.S. Preventive Services Task Force should be incorporated in the local strategies to reduce BP.[8,9] These non-pharmacological recommendations include: (i) achieving and maintaining a healthy body weight; (ii) participating in regular leisure-time physical activity; (iii) adopting of a healthy diet, including reduced salt intake and increased potassium intake; (iv) stopping smoking; and (v) managing stress. A review of clinical trials and longitudinal studies showed that even small reductions in salt intake lower the BP and might prevent the development of hypertension or improve BP control among adults with hypertension.[10]

Screening for and control of BP is one of the most effective ways to prevent heart disease and stroke. In Bhutan, to ensure cost effectiveness, generic and least expensive formulations should be used. The decision to initiate drug therapy for hypertension should be based on the cardiovascular risk (WHO/ISH risk chart). From a provider's perspective, there is an urgent need to have a national hypertension guideline, and prescribers at all levels, from the basic health unit (BHU) level upwards, must be trained in its use. The availability of antihypertensives is adequate, according to the national essential drugs list of Bhutan. However, the inclusion of hydrochlorthiazide, methyldopa and hydralazine at the BHU level in the current list needs to be reviewed. The WHO Package of Essential NCD (PEN) Interventions has been successfully pilot-tested and is envisioned to be scaled up to all the districts in 2013. This package contains provision for the inclusion of more classes of antihypertensive drugs at the BHU level. From a health unit and provider point of view, Bhutan must ensure that its equitably distributed units are strengthened with better equipment, trained personnel and drugs. The success or failure of implementing the WHO PEN will determine to a large extent the outcome of hypertension prevention and control in Bhutan.

Progress in controlling hypertension cannot be achieved without improvement in the quality of health care. Countries with good coverage talk about efforts to improve the measurement of successes and shortfalls, such as the Physician Quality Reporting System,[11] which is designed to improve provider performance. They also discuss system improvements, including adoption of electronic health records with registry- and clinical decision-support functions. This would facilitate better patient management and the generation of patient and physician reminders to improve patient–physician interaction and patient follow up.[12] Other promising system improvements are also suggested, such as nurse- or pharmacist-led care, which can improve preventive care delivery and reduce time pressures on physicians.

While taking note of such ideas, Bhutan must not lose sight of initially concentrating on building a strong foundation for the prevention and control of hypertension. In 2009, the National Policy and Strategic Framework for prevention and control of NCDs was launched. This incorporates all of the above,[13] but now needs to be implemented effectively.

A national response to this major health problem has thus been initiated. We have to work diligently on a robust population strategy by roping in multiple stakeholders and building cooperation between them to ensure a high degree of awareness, legislative actions on tobacco, alcohol and import of high salt-processed foods, and persistent diet and exercise campaigns through the mass media. The task is enormous, with major implications for the burden of cardiovascular diseases and their associated costs in Bhutan. Last but not least, it is important to track this epidemic through surveillance. A second STEPs survey in both urban and rural Bhutan in 2013 will provide a firm foundation for this activity.

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