

Hypertension in Guyana: Lessons from a Health Promotion Program

Amy Cheng B.Sc. (OT5)
Chris Prabhakar B.Sc. (OT5)
Varun Kapila B.Sc. (University of Ottawa)
Natasha Sukhai B.Sc. (University of Ottawa)
Jose Monzon Ph.D. (OT5)

Abstract

Cardiovascular disease is a major cause of mortality and morbidity worldwide. Currently, 15 million people die each year from cardiovascular diseases, with over 63% of these deaths occurring in developing countries. Studies have shown that reducing existing risk factors can significantly reduce the mortality and morbidity of cardiovascular diseases. The current study evaluates the effectiveness of a health promotion effort to reduce cardiovascular risk factors amongst hypertensive patients in Guyana. Observational data on this subset of the Guyana population was also obtained. Data was collected from 224 patients attending monthly hypertensive clinics in three communities in Georgetown, Guyana. Findings indicated that a significant proportion of patients were females (87.1%) between 40 to 65 years of age. Male patients were more likely than female patients to consume alcohol, exceeding 14 drinks a week, and smoke cigarettes. Health promotion activities are imperative to reduce the risk factors associated with cardiovascular disease mortality and morbidity. Our data suggest that long term, sustained efforts, such as frequent weekly seminars and workshops, heart-healthy cooking classes and exercise/stretching classes, are essential to the success of these programs. There is also a need to create programs that address the male population more effectively.

Introduction

The incidence of cardiovascular diseases (CVD) is rapidly increasing. It has been estimated that in the year 2020, CVD will surpass infectious diseases to become the leading cause of mortality worldwide.¹ Currently, 15 million people die each year from CVD, with over 63% of these deaths occurring in developing countries.² The World Health Organization (WHO) estimates that in the next 10 years, more than 11 million people in Latin America and the Caribbean will die from CVD, with individuals 60 years old and under accounting for 23% of these deaths.³

The rise in deaths from CVD can be attributed to demographic changes, such as an increasing and aging population, and to the progressive urbanizations and lifestyle changes that are occurring

in many developing nations.² A recent study compared the prevalence of hypertension (> 160 mmHg systolic, or > 95 mmHg diastolic) amongst individuals of African descent, and found it to directly correlate with the degree of urbanization in the individuals' country of residence.⁴ Guyana is a country that is situated on the north east corner of the South American continent. With its trade and culture closely linked with the neighbouring Caribbean nations, Guyana is not immune from these trends of increasing urbanization. In fact, hypertension is the third highest cause of non-communicable disease mortality in Guyana (4.6% of deaths, affecting more females than males).⁵ Moreover, a subset of deaths related to cerebral vascular and ischemic heart diseases, the leading causes of death in Guyana (11.7% and 9.8% respectively),⁵ result from poorly managed hypertension. Strikingly, this trend is observed in most developing countries in the Caribbean.²

The ethnic composition of Guyana, 48.2% East Indian descent, and 27.7% African descent, also contributes to the high prevalence of hypertension in the country.⁵ The authors of a recent UK study concluded that when age, BMI, smoking, and alcohol, were controlled for, black men and women, and women of South Asian descent (Indian, Pakistani, and Bangladeshi) were almost twice as likely to be hypertensive as white men and women (OR: 2.0, 1.7, and 1.9 respectively).⁶

Despite the high prevalence, deaths from CVD can be prevented using early detection and health education efforts. Numerous studies have shown that by reducing existing risk factors for CVD, such as cigarette smoking, hyperlipidemia, high fat diet, sedentary lifestyle, and hypertension can significantly reduce the mortality and morbidity of CVD.⁷ Moreover, education efforts to promote healthier lifestyle habits and better hypertension management must target the unique socioeconomic, cultural, and environmental factors affecting the Caribbean and Guyanese people.

In response to this need, the Guyana Red Cross Society initiated the *Community Health Outreach Program* in the summer of 2000. The program consists of a number of workshops, television panel discussions and radio interviews to educate the public about healthy lifestyle habits and hypertension awareness. Free blood pressure

clinics were also conducted for the general Guyanese public to provide an opportunity for individuals to have their blood pressure measured, and to promote early detection and management of hypertension. Health promotion efforts aimed at reducing existing cardiovascular risk factors were also incorporated into the program by conducting free clinic talks and seminars for hypertensive patients (systolic blood pressure > 160 mmHg, and/or diastolic blood pressure > 90 mmHg). These seminars focussed on lifestyle habits and changes, practical ways to manage their illness, and the means to avoid disease complications. The current study evaluates the effectiveness of the seminars for the hypertensive patients conducted by the Community Health Outreach Project during the summer of 2002. Also, included in this study is a description of the demographics and behavioural characteristics of this unique subset of the Guyana population: the patients attending the monthly hypertensive clinics in the Agricola, Cambellville, and Kitty communities.

Materials and Methods

Three community health centres in Georgetown, Guyana conduct clinics for patients diagnosed with hypertension. Campbellville and Kitty Centres offer weekly hypertension clinics and Agricola Centre offers biweekly clinics. Patients are scheduled for monthly appointments at which time their blood pressure is measured and prescriptions extended or altered.

All patients with diagnosed hypertension attending these clinics were included in the study. Verbal consent was obtained (for efficiency and due to patient preference), and pre-intervention surveys were completed by patients to obtain demographic, lifestyle, and medical information, and to assess their baseline knowledge of hypertension in the areas of risk factors and complications, and methods of hypertension management (See table 1). A trained group of medical student volunteers from the University of Toronto and the University of Ottawa administered the pre-scripted surveys verbally and systematically. The volunteers were also present to answer any patient concerns. After completion of the pre-intervention survey, the students presented a standardized, pre-scripted information seminar to the patients. This talk was designed to provide patients with knowledge of hypertension and with specific advice on lifestyle modifications to lower and manage their blood pressure. Information regarding medication and the importance of compliance was also addressed. Pamphlets detailing the points addressed during the seminar were distributed free of charge to all in attendance. During the patients' next scheduled visit (within one to two months), a post-intervention survey was administered. Patients received only one seminar before being asked to complete the post-intervention survey. This survey contained questions in areas that were previously asked in the pre-intervention survey (i.e. risk factors and complications, methods of hypertension management). Assessment of the short term effectiveness of the clinic seminars was done by comparing the percentage of correct answers between the pre- and post-intervention surveys of each patient.

The pre and post-intervention surveys were developed from previous models used by the Pan American Health Organization.⁷ The

surveys and seminar contents were modified to be culturally sensitive to the Guyanese public through consultations with Guyanese community health professionals and members of the Guyana Ministry of Health. The surveys were pre-tested on a small group of volunteers between the ages of 40-65, who were from the representative communities in Georgetown.

Ethics approval for the study was obtained in Guyana. Categorical demographic data was analyzed using the chi square test and the means were analyzed using the student t-test.

Results

Of the total 224 patients interviewed at the three sites, females composed a majority of the population (87.1%; statistically significant, $p < 0.05$). The majority of both male and female patients interviewed were between 40 to 65 years old (55.2% and 57.9% respectively) (Table 1).

Table 1
Lifestyle Habits of Male and Female Hypertensive Patients attending Hypertension Clinics in Georgetown Guyana

	Male (%)	Female (%)	Total (%)
Number of patients	29 (12.9)	195 (87.1)	224 (100)
Age			
< 40 years old	1 (3.4)	8 (4.1)	9 (4.0)
40 to 65 years old	16 (55.2)	113 (5.8)	129 (57.6)
> 65 years old	12 (41.4)	74 (3.8)	86 (38.4)
Dietary Preference			
Vegetarian	1 (3.7)	8 (4.1)	9 (4.1)
No Red Meat	7 (25.9)	75 (38.5)	82 (36.9)
Non-vegetarian	19 (70.4)	112 (57.4)	131 (59.0)
Main Food Preparation Method			
Fried	8 (34.8)	42 (27.8)	50 (28.7)
Steamed	10 (43.5)	71 (47.0)	81 (46.6)
Boiled	5 (21.7)	33 (21.9)	38 (21.8)
Baked	0 (0)	5 (3.3)	5 (2.9)
Alcohol Consumption			
No	10 (25.6)	165 (76.4)	175 (79.9)
Yes	16 (41.0)	28 (23.6)	44 (20.1)
If yes, drinks < 14 /wk	7 (62.5)	19 (67.9)	26 (72.2)
If yes, drinks > 14 /wk	6 (37.5)	4 (32.1)	10 (27.8)
Smoke cigarettes			
No	22 (73.3)	183 (97.3)	205 (93.6)
Yes	8 (26.7)	5 (2.7)	13 (6.4)
Exercise			
No	11 (31.4)	74 (38.9)	85 (37.8)
Yes	24 (68.6)	116 (61.1)	140 (62.2)

Several questions were used to determine lifestyle behaviours of the patients visiting the clinics. Regarding dietary behaviour, 95.9% of females, and 96.3% of males reported a non-vegetarian diet, with 40.1% and 26.9% of these individuals not eating any red meat. When asked about the main methods of food preparation, the majority of both males and females (43.5% and 47.0% respec-

tively) identified steaming as the main cooking method used to prepare their meals (Table 1).

Regarding alcohol, the majority of male patients surveyed consumed alcohol (61.5%), compared to a minority of female patients (14.5%; statistically significant, $p < 0.05$). Of the individuals consuming alcohol, the majority of the male and female patients (53.8% and 82.6% respectively) consumed less than 14 drinks per week (Figure 1). Of the patients surveyed, 26.7% of the males, and only 2.7% of the females smoked cigarettes (statistically significant, $p < 0.05$) (Figure 1). The majority of both male and female patients (68.6% and

61.1% respectively) exercised regularly, with walking being the major form of exercise employed (Table 1).

The level of hypertension knowledge was compared in three population sets: 1) All patients that took the pre-intervention survey ($N=193$), 2) those patients that attended the seminar and wrote the pre- and post-intervention survey ($N=40$), and 3) those patients that took only the post-intervention survey, but did not attend the seminar ($N=11$). Respectively, their percentages of correct answers were 68.3%, 72.1%, and 61.3%. Although these trends may suggest that those individuals in set 2 did better than those in sets 1 or 3, the differences in value are not statistically significant. (Comparing groups 1 and 2, the power is: 0.2057; comparing groups 1 and 3, the power is: 0.2750; See Figure 2).

Discussion

The initial stages of the Precede-Proceed model⁹ of health promotion were implemented on a target population of hypertensive patients in Guyana. This model tries to target specific determinants of health and to design and evaluate logical tools and interventions that will ultimately change behaviours and attitudes that put patients at risk for disease.⁹ According to this model, we designed an informative seminar intended to educate hypertensive patients during their regular visits to their neighbourhood clinics. We recruited the help of medical professionals at the community and government levels to ensure that the seminars we provided addressed the relevant behavioural, social and environmental influences affecting hypertensive patients in Guyana, and specifically those that came to the community clinics. The seminars focused on general information relating to hypertension, its co-morbidities and the behavioral and social risk factors associated with cardiovascular disease. Before the seminar was implemented, the baseline knowledge, attitudes and behaviours of these patients were determined with a pre-intervention survey. After the seminar intervention, another survey was given to evaluate any improvements in knowledge and positive changes in attitudes. The goal of this program was to ultimately change the behaviours that put these patients at risk for hypertension complications and cardiovascular disease.

To determine whether the seminar that we implemented improved the knowledge and attitudes of the hypertensive patients coming to the community clinics, we tested them before and after the seminar, over a one to two month period. On both the pre and post-intervention surveys, questions were asked concerning hypertension, exercise, smoking, diet, and alcohol consumption. The patient population that attended the seminar intervention and wrote the pre-intervention survey and also the post-intervention survey scored 72.1% correct responses. The patient population that wrote the pre-intervention survey scored 68.3% correctly, while those that only took the post-intervention survey without attending the seminar scored 61.3% correctly. Although these trends may suggest that those individuals that attended the seminar did better than those that did not attend and those that wrote the pre-intervention test, these values do not differ in a statistically significant manner. There could be several possible reasons why the patients that attended the seminar did not do significantly bet-

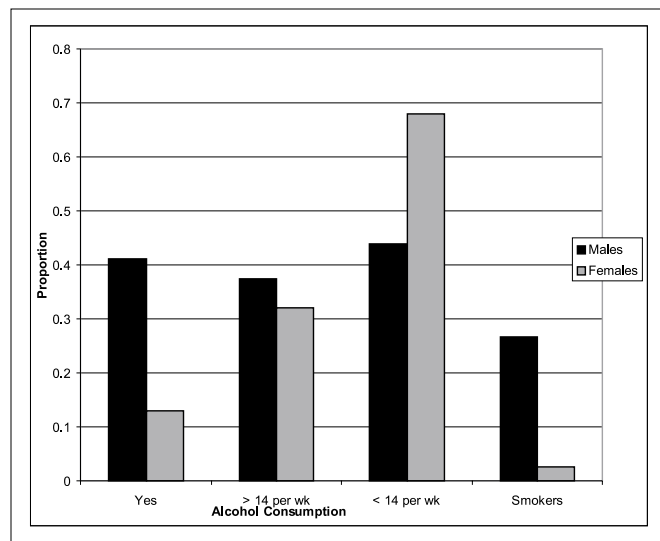


Figure 1. Alcohol Consumption and proportion of smokers that were part of the secondary prevention study. Alcohol consumption (yes, >14 per week, and < 14 per week). Significantly more males drink alcohol and drink excessive amounts of alcohol per week as compared to females. Significantly more males smoked tobacco products as opposed to female patients.

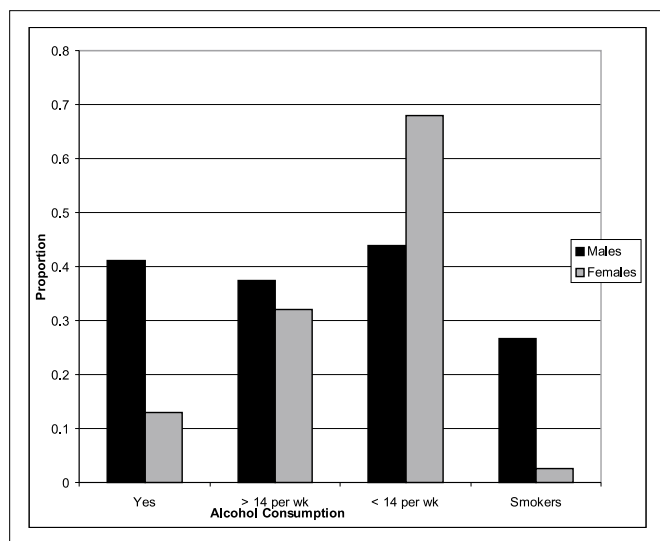


Figure 2. The scores of the three populations studied on the pre-intervention or post-intervention survey. Although these trends may suggest that those individuals that attended the seminar did better than those that did not attend and those that wrote the pre-intervention test, these values are not statistically significant from one another (Error bars refer to standard error).

ter than those that did not attend. First, the level of education was not determined in the patient population; however, all study participants were literate in English and the seminar contents were designed to teach a grade school level of education. Second, the duration of the study and the frequency of the seminars may have been inappropriate. All patient populations only attended one seminar and were given the post-intervention survey one to two months later. More frequent talks over a longer period of time may improve the patients' learning. Third, the environments in which the seminars were performed were suboptimal. Often, these were steel-roofed shacks with holes in the walls and ceilings. Fourth, large groups of patients often attended the seminars and smaller groups or one-on-one teaching may be more appropriate. Finally, a statistical significance may not have been observed due to the small sample sizes and, consequently, the decreased power of the statistical tests.

Our data indicate that there is a clear and significant difference in many of the lifestyle habits between the male and female patients. The proportion of hypertensive males consuming alcohol (41.0%) was significantly larger than the proportion of females who consume alcohol (23.6%). It can be argued that alcohol, in particular red wine, in moderate amounts, is a negative risk factor for cardiovascular diseases, particularly in males.¹⁰ However, it is recommended by the Heart and Stroke Foundation that healthy and hypertensive individuals should drink in accordance with low-risk drinking guidelines (i.e. 2 or fewer standard drinks per day, with consumption not exceeding 14 standard drinks per week for men and 9 standard drinks per week for women) to reduce hypertension and risk of CVD.¹⁰ It was found from our study that there are a significantly more males drinking above these safe limits (46.2%) than females (17.4%). The main reason why there is a difference between the proportion of male and female drinkers, and the amount that each group consumes, can be attributed to the significant social stigma associated with drinking in Guyana. It is less acceptable in the Guyanese society for females to consume alcohol. Consequently, they may be less inclined to report their amount of alcohol consumption. Smoking is a major risk factor for CVD and it also increases the complications associated with hypertension.¹ In our study, it was found that 26.7% of the male patients smoke, which is significantly higher than the 2.7% of the female patients who smoke. This difference may be accounted for by the social stigma described above.

Interestingly, significantly fewer males attended the clinics than females; 12.1% of the hypertensive patient populations visiting these clinics were male. This result is surprising considering that males have an increased risk of CVD and hypertension.¹² Moreover, in light of the data presented above, they also participate in riskier behaviors, such as smoking and drinking excessive amounts of alcohol. A possible explanation for this phenomenon is that males may not be attending the health clinics because the clinic hours conflict with their work schedules, as males are twice more likely to be in the workforce than females in Guyana.¹³ The hypertension clinics at all three locations took place during weekday work hours. However, informal observations conducted during the free public blood pressure clinics run by the Red Cross on weekends demon-

strated that the majority of the attendants were also females. These observations suggest that interventions should be designed to target this population of patients with an increased risk for undiagnosed hypertension and CVD. These interventions could include holding workplace hypertension seminars and TV campaigns designed to inform male patients about the importance of maintaining a relationship with their family doctor.

Despite not observing any significant improvements in the patient population attending these seminars, important information was obtained necessary to change and potentially make the hypertension seminars more effective and efficient at delivering its messages. Moreover, this study identified a subset of males that may go undiagnosed for hypertension and CVD. Interventions directed towards this population should reduce the prevalence, mortality and morbidity due to hypertension and CVD in Guyana.

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