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The Association between the Prevalence and Age Standardized Death Rate of Hypertension within the South African Populace Over a 15-Year Interval (2006-2015)

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Abstract

South Africa is the biggest contributor to the overall African hypertension prevalence. Hypertension is a modifiable cardiovascular pathology, through medication, nutrition and habitual physical activity. The aim of this study is to determine the correlation between the prevalence of hypertension in South Africa and its respective age standardized death rate (ASDR). The South African hypertension prevalence was retrieved from the South African Council of Medical Schemes (CMS), while the ASDR was retrieved from the Global Health Estimate 2016. Reportedhypertension has steadily been increasing among the South African populace by 5.42% annually from 2006-2015. There is a strong positive correlation with the South African hypertension prevalence and it's ASDR. The awareness and management of hypertension in South Africa is poor. Many South Africans cite poverty as a key factor that prevents them from purchasing healthy foods and participating in regular exercises. Walking is a free mode of exercise, which all abled-bodied hypertensive persons can perform. Habitual walking can serve as an effective hypertensive management rehabilitation tool in conjunction with medication to better control hypertension.

Key words: *hypertension, mortality, physical activity*.

Introduction

Hypertension is elevated blood pressure, which is an underlining marker of various cardiovascular pathologies[1]. It is an international health concern, affecting 22% of the world's adult populace[1,2]. The prevalence of hypertension in Africa is 44% among the adult populace; with many more individuals undiagnosed, placing them in the precarious position of untimely mortality[3]. Hypertension is a preventable risk of morbidity and/or mortality that can be combatted effectively by a collaborative healthcare approach of education, medication, nutrition and regular physical activity[1].

The World Health Organization (WHO) 2015 Health Report approximates 27.4% men and 26.1% women of South African populace to be hypertensive[4,5]. South Africa has the highest prevalence of hypertension in sub-Saharan Africa [6]. Not with standing these concerning hypertension statistics, the awareness and control measures in South Africans is poor. Peltzer et al, Ataklte et al, and Palafox et alidentified that awareness among South Africans ranges between 19.0–56.0%, whilst management varies between 4.0–33.0%, respectively[7,8,9]. Cifkovaet al compared the South African hypertension awareness and management campaigns to other countries revealing that these countries awareness ranks approximately 82% and their management is 51% [10]. The poor awareness and management among hypertensive South Africans are alarming as better awareness is known toleads to bettermanagement (improved pharmaceutical, nutritional and habitual physical activity strategies), all of which have the possibility to considerably decline the morbidity and mortality [5].

The WHO has reported that 46.9% of the South African populace (51.6% women and 42.2% men) do not participate in adequate amount of regular physical activity [11]. Sub-Saharan Africa is undergoing rapid urbanization, which has altered the lifestyle of its populace to become physically inactive, thereby increasing the risk of cardio-metabolic pathologies [12]. Physical inactivity is responsible for 8% of the principal non-communicable diseases (NCDs) [13]. Non-communicable diseases are chronic diseases, which are non-infectious [14]. The four main types of NCDs are cancer, cardiovascular diseases, chronic respiratory diseases and diabetes [13]. Risk factors related to NCDs are hypertension, elevated low-density lipoprotein cholesterol,overweight, obesity and hyperglycaemia [14]. The WHO 2014 Report identified 53.9% (57.6% females and 43.2% males) South African adults to be overweight and 26.8% to obese (37.3% females and 15.7% males) [15,16]. Obesity is a known risk factor for hypertension, hyperglycaemia, elevated serum triglycerides, diminished high-density lipoprotein cholesterol and increased insulin resistance, which precipitates the development of cardiovascular diseases [17]. Empirical literature identified that the upsurge of hypertension is aligned with obesity and poor nutritional choices, which are both modifiable risks of premature mortality [18]. Habitually physical activity has been recommended as an adjunct to pharmaceutical management and nutrition modifications of obesity and hypertension [18]. Obese individuals have a five times higher probability of hypertension as compared to their normal body mass counterparts [19]. The aim of this paper is to review the association between the prevalence of hypertension and its ASDR among South Africans over a 15-year period at five-year intervals (2006, 2010 and 2015). The paper advocates the habitual adherence of physical activity to control hypertension.

Methods

This study engaged in a desk review of South African hypertensionprevalence and ASDR from the 2016 Global Health Estimates (GHE)archives and South African Council for Medical Schemes (CMS) [20,21]. This method of gathering and analysing information regarding the pathology of societal death rates has proven to be successful and reliable. Nojilana*et al.* used ASDR collected from the 2010 GHE to identify the developing trends of NCDs in South Africa; during the period of 1997 to 2010 [22]. This report used the 2016 GHE ASDR, which reflects the death ratesfor 2006, 2010 and 2015 of both genders over various age strata. The 2016 GHE ASDR archive contains the communicable diseases, NCDs, injuries, nutritional, maternal and perinatal mortality profiles of all countries. The authors chose to use 2006, 2010 and 2015 statistics because it indicated growth trends over a 15-year interval. The 2006, 2010 and 2015 hypertensive ASDR was compared to the South African hypertension prevalence respectively. The GHE and the CMS archives are found in the public domain, and therefore the manuscript did not require ethical approval. The 2016 GHE and CMS were found through a Google search. The annual percentage growth trends of the South African hypertension were calculated using the following formula:

% Δ = Prevalence of year – Prevalence of previous/ Prevalence of the year) x 100

Example: % growth of 2007 = (60980 -57600)/60980 x 100

= 5.54%

The formula was adopted from Ellapen et al [23]. Descriptive (mean, standard deviation, and percentages) and inferential statistics (t-tests and correlation) were employed to analyse the data, Probability was set at $p<0.05$.

Results

The South African hypertension prevalence illustrates a general upsurge from 2006-2015, with an annual percentage growth rate of 5.42% (Table 1).

Table 1. *The prevalence of hypertension in South Africa (2006-2015) (data retrieved from CMS, 2017). [21]*

Year	Prevalence	Annual % Growth Rate
2006	57 600	N/A
2007	60980	5.54
2008	65200	6.47
2009	72900	10.56
2010	72000	-1.25
2011	82560	12.79
2012	86160	4.17
2013	87200	1.19
2014	89070	2.09
2015	96050	7.26
Mean (±SD)	76972 (±13087.27)	5.42 (±4.47)

Table 2. *A comparative review of the prevalence of hypertension and ASDR among South Africans (data retrieved from CMS and GHE). [20,21]*

Year	Hypertension Prevalence	Hypertension ASDR
2006	57600	32410
2010	72000	37979
2015	96050	51956
Mean (±SD)	75216.66 (±19425.7)	40781.66 (±10069.8)
t-test		0.02

Table 2 compares the hypertension ASDR to the South African hypertension prevalence, over 2006, 2010 and 2015, which indicated a significant difference (p=0.05). A strong positive correlation between South African hypertension ADSR and prevalence was found (r=0.9). The average growth rate of hypertension ASDR of the 15-year interval is 20.78%.

Discussion

Over a 15-year period; (2006-2015) hypertension has steadily increased by average of 5.4%, with a positive relationship to mortality rate. Opie and Seedat approximate 80 million adults to be hypertensive in Africa, with a projection of 150 million by 2025, of which South Africa is a major contributor [6,24]. In spite of these disconcerted hypertension prevalence and mortality statistics and estimates, the awareness and control campaignsare poor [7,8,9]. Cifkova et al reported that countries who have amplified their hypertension awareness and control campaigns have been able to better manage the condition [10]. The primary areas of awareness that should be stressed to the community areearly identification of signs and symptoms, pharmaceutical treatment, making healthy nutritional choices and adherence to regular physical activity. Jongen et al reported that many South Africans cite poverty as a limiting factor, which prevents them from purchasing healthy food and participation in recreational activities [5]. The authors do concur that cost of healthier foods is more expensive than unhealthy foods. However, the adherence to regular physical activity is not influenced by money. Evans et al reported that the economic cost of medical treatment for physical inactivate related diseases such as hypertension is much more costly than the adherence to regular physical activity (PA), which adversely impacts the individual's and country's economy [25].The American College of Sports Medicine has recommended 150 minutes of moderate intensity PA per week or 75 minutes of vigorous intensity PA per week [26]. The easy and simplest mode of PA is walking. The authors postulate that abled-bodied hypertensive individuals can start walking approximately 25-30 minutes/day aimed to improve their health. Simple heart rate measures of counting number of beats per minute can be used to determine exercise intensity. Weekly gardening, mowing the lawn and washing one's car are also examples of regular weekly physical activity in addition to walking. These examples do not cost money, but initiative. Warburton et al reported that when people regularly exercise they increase their quality of life and longevity [27]. Lee and Paffenbarger reported that when physical inactive people begin to regularly exercise, they increased their longevity by 0.72 years. [28]

Conclusion

In South Africa hypertension and its ASDR is steadily increasing, however awareness and management campaigns still remains poor. Increased awareness of hypertension will help facilitate better management. Regular physical activity in conjunction with hypertension medication can be a useful rehabilitation tools to control it. The cost of walking is minimal as compared to the cost of medical and pharmaceutically treating hypertension. The South African Department of Health should launch awareness campaigns highlighting the benefits of daily walking to control hypertension.

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