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Association between Family History and Hypertension among the Patients in Nairobi: A Case Study of Mbagathi Hospital

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Abstract

Hypertension is an important public health issue globally. With the global prevalence of hypertension being 40%, Africa ranks the highest with a prevalence of 46%. The high burden in developing countries is attributable to the high levels of risk factors. In Kenya, 20-30% of adults had hypertension in 2013. However, there is little information on the prevalence of hypertension and its association with family history as its risk factor among adult patients seeking medical care in Nairobi. The primary goal of this study was to determine the association between family history and hypertension among adult patients at Mbagathi Hospital. Fisher's formula was used to determine the sample size which was composed of 384 respondents while systematic random sampling was used to select the study participants. The study adopted a cross-sectional, descriptive study design. Data collection included the use of a questionnaire that included both open and closed-ended questions given to each participant with each being allowed to exercise informed consent before responding to questions. Descriptive statistics mainly means and percentages were used to analyze data. Inferences were made using the chi-square statistic. Statistical significance was set at P <05. Patients with hypertensive parents had a high prevalence of hypertension (42.2%). A significant connection between family history and hypertension (p=0.017) was discovered using a statistical chi-square test while 69.9% of the participants had a family member who had hypertension. Family history was an associated risk factor for hypertension; respondents who had a family member with hypertension and mostly those with a hypertensive mother were more likely to be hypertensive.

Keywords: *Hypertension, Family history, Patients, Mbagathi Hospital*

1.0 Introduction

Hypertension is defined as a systolic blood pressure of 140 mm Hg or higher, and/or diastolic blood pressure of 90 mm Hg or higher. A systolic blood pressure of 120 mm Hg and a diastolic blood pressure of 80 mm Hg are considered normal for adults (WHO, 2013). Normal systolic and diastolic blood pressure levels are critical for the proper function of major organs including the heart, brain, and kidneys, as well as overall health and well-being (WHO, 2013). Hypertension is the leading cause of morbidity and mortality (Stuart & Francesco, 2017). Identifying those at the highest risk of hypertension and ensuring they receive appropriate treatment can prevent premature deaths (WHO, 2016).

Blood pressure is expressed as two digits above each other and is measured in millimeters of mercury (mm Hg). The systolic blood pressure, which is the peak pressure in blood vessels when the heart contracts or beats, is the higher figure. The diastolic blood pressure, which is the lowest pressure in blood vessels between heartbeats when the heart muscle relaxes, is the lower value.

According to WHO (2013), most hypertensive persons experience no symptoms at all. Symptoms of hypertension include headaches, shortness of breath, dizziness, chest pain, heart palpitations, and nosebleeds. Ignoring such signs can be harmful, but they cannot be used to diagnose hypertension. Hypertension is a serious indicator that major lifestyle changes are needed. The CDC (2014) advised that the only way to know if you have it is to measure your blood pressure.

Globally, around 40% of adults aged 25 and over had hypertension in 2008 (WHO, 2014). Hypertension now accounts for 7% of the worldwide disease burden, up from 4.5 percent in 2000. As a result, hypertension is the leading cause of illness and mortality worldwide (Vijver, 2014). Hypertension was listed as the main cause of death and disability worldwide in 2010, accounting for 9.4 million deaths and 7% of disability life adjusted years (Sidhu, 2014).

Currently, the burden of hypertension is borne primarily by low and middle-income countries, (LMICs) where it affects around one in every five adults, and this number is expected to rise. Nearly three out of every four people with hypertension would live in LMICs by 2025. As a result, the absolute number of people affected by hypertension in LMICs is much higher, and this number is anticipated to rise as urbanization and longer life expectancy occur in these nations as a result of globalization and economic growth (Vijver, 2014).

Hypertension is prevalent in several parts of the world, with rates ranging from 5.2 percent in rural North India to 70.7 percent in Poland (Patrick, 2004). The prevalence of hypertension varies between 20 and 50 percent in economically developed countries. In the Asia-Pacific area, the prevalence of hypertension ranges from 5 to 47 percent in males and 7 to 38 percent in women. (Lawes *et al*, 2004). In the United States, 31% of adults have high blood pressure, or one out of every three adults (CDC, 2013). Until recently, hypertension was mostly connected with the world's wealthier regions. However, the condition is becoming more prevalent in low and middle-income countries (LMICs), where health resources are scarce and stretched due to a high burden of infectious diseases such as HIV, malaria, and tuberculosis, and where hypertension control awareness and treatment are still at very low levels.

The African Region has the highest prevalence of hypertension, at 46 percent of persons aged 25 and more, while the Americas have the lowest prevalence, at 35 percent. High-income countries have a lower prevalence of hypertension (35%) than other groups (40%) in general (WHO, 2013). In 2008, the prevalence of hypertension in Nigeria was estimated at 42.8 (WHO, 2011). In Kenya, 20 to 30 percent of adults had hypertension in the year 2013 (Department of non-communicable diseases, personal communication, 2014). According to Joshi *et al*., (2014) the prevalence of hypertension among adults in an urban slum in Kenya was 22.8%. Further, a study conducted by Hendriks et al. (2012) targeting rural and urban communities in Kenya found that the hypertension prevalence among adults was 23.7%. However, information regarding the prevalence and factors contributing to hypertension among adult patients seeking healthcare in Nairobi is not known. Further, there has been no research on the prevalence and factors contributing to hypertension among adult patients seeking healthcare in Mbagathi hospital. Therefore, this study sought to establish the prevalence of hypertension and its association with family history among adult patients seeking healthcare in Mbagathi Hospital.

2.0 Methodology

This research adopted a cross-sectional study design which involved the collection of data at a point in time and descriptive and analytic data analysis methods. The research was carried out at Mbagathi District Hospital (MDH), which is located in Nairobi County's Dagoretti Sub- County. The hospital served a broad population both inside and outside of Nairobi, with the majority of patients being primarily urban poor. Mbagathi Hospital also had outpatient (OPD) clinics including diabetes, hypertension, ophthalmology, maternal and child health, dermatological, TB, HIV, and disability assessment clinics. The bustling outpatient section saw around 700 people every day on average. The population of the study was drawn from adult patients attending Mbagathi District Hospital. The needed sample size was calculated using the Fisher *et al* (1991) formula:

n = z2 pq d2

d = the degree of accuracy desired, here set at 0.05 corresponding to the 1.96.

In substitution, $n = \frac{1.962 \times 0.5 \times (1-0.5)}{0.052} = 384$

The sample size was determined as 384 patients. The study participants were chosen via systematic random sampling. A form of probability sampling procedure in which sample members from a wider population were selected based on a random beginning point and a fixed periodic interval is known as systematic sampling. By dividing the population size by the intended sample size, this interval, known as the sampling interval, was calculated.

A questionnaire with both open and closed-ended questions was given to each participant with each being allowed to exercise informed consent before responding to questions in the questionnaire. Interviewer-administered questionnaires were adapted from the World Health Organization STEPwise approach to surveillance (STEPS) instrument. The stepwise approach to surveillance (STEPS) is a method for collecting data on diseases and associated risk factors systematically. Anthropometric and blood pressure measurements were obtained by appropriate measuring instruments. The Statistical Package for Social Sciences (SPSS) software version 20 was used to analyze the data. Means and frequencies were derived as descriptive statistics. Linear regression tests were used to establish the statistical significance of the association between variables, and graphical data presentation was used when suitable.

3.0 Results and Discussion

The target population for the study was three hundred and eighty-four (384) respondents as calculated. The study achieved a response rate of 96.09% (369 out of the calculated sample of 384).

Social Demographic Characteristics of the Respondents

In this study, most of the respondents [70.1%] were aged below 40 years, that is, 128 [35.9%] between 20-29 years, and 122 [34.2%] between 30-39 years. Those above 40 years were 107 [29.8%]. Female respondents comprised the majority [251, 68.2%] compared to the male respondents [117, 31.8%]. Regarding the marital status of the respondents in this study, more than half [235, 64.9%] were married, more than a quarter [106 29.3%] were single, and a few [8, 2.20%] were widowed. The study determined the highest level of education of the respondents and found that a majority of them [280, 77%] had either secondary or primary level of education [160, 44.0% and 120, 33.0% respectively]. The remaining [80, 22.0%] had college/university level of education, and only a few [4, 1.10%] indicated having no education. Concerning respondents' occupation, 138 [37.4%] were employed, 91 [24.7%] were self-employed, while 75 [20.3%] were unemployed.

Table 1: Demographic Characteristics of Patients

		n	[%]
Age	20 - 29 years	128	[35.9]
	30 - 39 years	122	[34.2]
	40 – 49 years	72	[20.2]
	50 – 59 years	28	[7.80]
	60 - 70 years	7	[1.80]
Gender of the respondents	Male	117	[31.8]
	Female	251	[68.2]
Marital Status	Single	106	[29.3]
	Married	235	[64.9]
	Divorced	13	[3.60]
	Widowed	8	[2.20]
Level of Education	Primary	120	[33.0]
	Secondary	160	[44.0]
	College/University	80	[22.0]
	None	4	[1.10]
Occupation	No response	65	[17.6]
	Employed	138	[37.4]
	Self-employed	91	[24.7]
	Unemployed	75	[20.3]

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Prevalence of Hypertension among Respondents

Blood pressure was recorded for all the respondents in the study, and out of the 369 respondents, 279 [29.3%] were hypertensive. The prevalence of hypertension is presented in the pie chart presented, Figure 1.

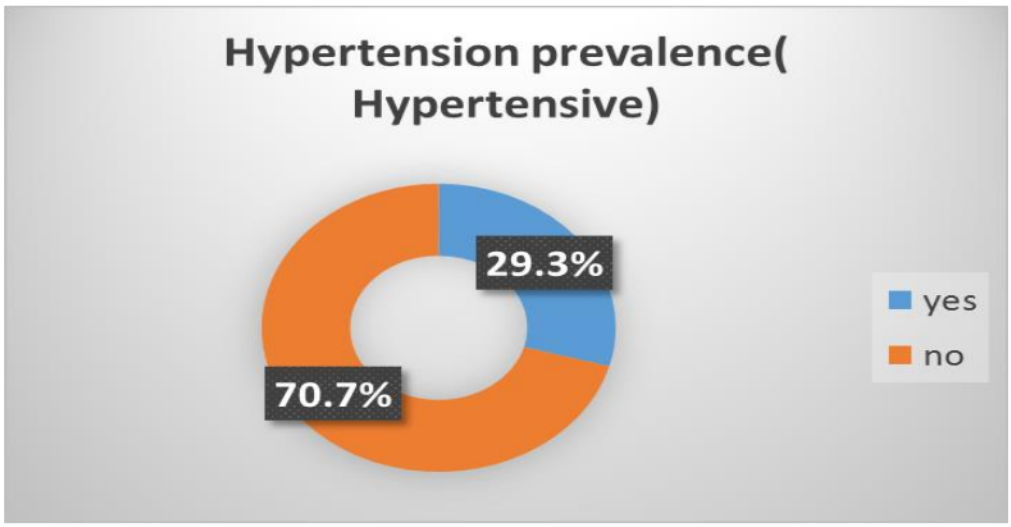

Figure 1: Prevalence of Hypertension among respondents

Family history

Information was sought on whether different family members had a history of hypertension. The results are presented in Table 2. Assessing whether any of the respondents (immediate) family suffered from hypertension, it was evident that the majority [256, 69.1%, x^2=11.848, p<0.05] of the respondents indicated that they did not have an immediate family member suffering from hypertension; however [110, 30.1%], indicated that they had an immediate family suffering from hypertension. From the results, it was noted that the prevalence of family history of hypertension among the participants was 30.1%.

Table 2: Family history and Prevalence of Hypertension cross-tabulation

		n	[%]	Chi-Square (λ)	P-value
An immediate family member suffers from hypertension	Yes	110	[30.1]	11.848	0.01
	No	256	[69.1]		
If yes, type of relationship	Father	27	[24.8]	4.707	0.582
	Mother	46	[42.2]		
	Brother	4	[3.70]		
	Sister	13	[11.9]		
	Grand father	4	[3.7]		
	Grandmother	4	[3.7]		
	Others	11	[10.1]		

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Figure 2 shows the relative or family member reported to have hypertension among those who said they had a relative with hypertension. Respondents who reported their brother, grandmother, or grandmother having hypertension each had a prevalence of 3.67%. Only 11.93% of the respondents reported they had a sister with hypertension while 24.77% reported that their father had hypertension. The prevalence of hypertension was highest (42.2%) among patients of a hypertensive mother.

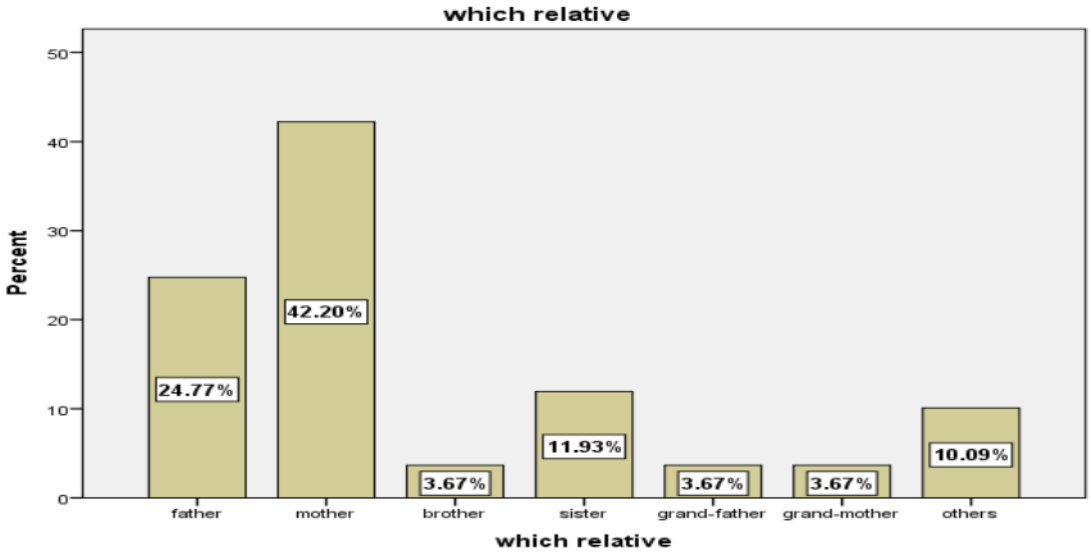

Figure 2: Relative with hypertension

Association of Family history and Hypertension

To find out the relationship between family history and hypertension among the elderly in Kiambu County, Chi-square tests were conducted between family history and the hypertension status of the respondents. Results in Table 3 show that family history is associated with hypertension. The chi-square test done to test the association between family history and hypertension gave a p=0.017 which showed a positive relationship between family history and hypertension.

Table 1: Association of Family history and Hypertension

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	5.699[a]	1	.017		
Continuity Correction[b]	5.109	1	.024		
Likelihood Ratio	5.557	1	.018		
Fisher's Exact Test				.022	.013
Linear-by-Linear Association	5.683	1	.017		
N of Valid Cases	352				

Discussion

Other studies done observed much higher prevalence values. Such studies include a study by Marwiro, (2012) where the prevalence of family history of hypertension was 68.8%. An analytical cross-sectional study with 322 individuals was conducted utilizing systematic random sampling from employment registrations. Being over 40 years old and having a family history of hypertension were both independent risk factors for hypertension. Saraswati, (2014) also observed a much higher prevalence of 74% among the patients while only 39% of the controls in the study had a family history of hypertension. The research was carried out at Pokhara's Western Regional Hospital. More than (29.2%) of the cases and controls were between the ages of 51 and 60.

This study result contradicted the null hypothesis which stated that there is no association between family history and hypertension. It was observed that an increase in the prevalence of patients' HPT is highly significant among respondents who had a family history of hypertension. Another study that found an association was done by Tozawa *et al*., (2001) who found out the association between family history and blood pressure among participants who were screened. In conclusion, regardless of established risk factors for hypertension, an increase in the number of family members with hypertension was associated with an increase in the prevalence of hypertension and blood pressure. A study that was also in line with the results was done by Ranasinghe *et al*., (2015) who explored the impact of family history (FH) on the prevalence of hypertension and associated metabolic risk variables in a large cohort of South Asian people drawn from a nationally representative sample in Sri Lanka. Patients having a family history of hypertension had a substantially greater prevalence of hypertension than those without (24.4%). The existence of a family history of hypertension in parents, grandparents, and siblings was linked to a significantly higher risk of acquiring hypertension in all individuals. It was concluded that the prevalence of hypertension was significantly higher in those with a family history of hypertension, according to our findings.

4.0 Conclusion

The majority of the respondents did not have an immediate family member suffering from hypertension. Those who reported having a hypertensive mother had a relatively high prevalence of hypertension compared to those who reported having another family member being hypertensive. A significant association between family history and hypertension was found using a statistical chi-square test.

5.0 Recommendations

The County Government of Nairobi needs to put more emphasis on intervention programs for hypertension and prioritize family history and age to improve outcomes of the interventions in the population. Such programs may include organizing medical camps to test blood pressure. They should target to test the blood pressure of individuals whose family members have had hypertension and those who are older to identify hypertension cases early.

The Ministry of health should institute public health awareness and sensitization on family history as a factor contributing to hypertension in the population. Large prospective cohort studies are needed to investigate the prevalence and family history as a factor contributing to hypertension in different populations in the country.

The findings of this study should provide researchers with a platform for further research studies and policymakers with information on planning programs for the prevention, of hypertension and family history as a risk factor. There is a need for further research on other

factors that were not included in the study, that may contribute to hypertension. There is also a need to do a study among various cohorts in the population.

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