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Utilization of the family genogram in the prediction of generational spread of hypertension among patients attending the GOPC of UCTH, Calabar

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Abstract
Background: Hypertension is one of the most important treatable causes of morbidity and mortality that runs in families. It is documented that families share risk, similarities in lifestyle, environment, diet, financial supplies, ability to cope with illness and generational implications with familial traits of illness. The Family Medical genogram is the best general tool for assessing a patient's risk for inheritable conditions or conditions that run in the family because it can identify potential familial and genetic vulnerabilities of diseases and lifestyle influences. This study used the Family genogram to determine the generational spread of hypertension as a basis for instituting prevention and health promotive strategies in the at-risk family members
Methodology: This was a hospital-based cross-sectional study of 216 hypertensive patients attending the GOPC of the UCTH Calabar who met the inclusion criteria and gave consent. All the respondents had a 24-item questionnaire administered to them which included the socio-demographic characteristics, a positive family history and other related information. Those with a positive family history of Hypertension had their family medical genograms constructed using GenoPro 2011 software. The data collected was analysed using SPSS version 18.0 and results were expressed in frequency tables and charts.
Results: There were more females 150 (69.4%) than males 66 (30.6%). Majority of the patients (201, 93%) were above 40 years of age while the rest were younger. Majority of the respondents were farmers, traders and artisans (126, 59.1%) and others civil servants (88, 40.7%) with most having secondary education and below.
A family history of hypertension was noted in 58 (27%) of the respondents of which majority (30, 52%) had a two generational spread, followed by those with a one generational spread (15, 26%) and the rest over three generations.
Most respondents had poor recall of the details of family members' hypertensive history, progression and outcomes.
Conclusion: Family history and medical genogram can be a very useful family tool in the management of hypertensives with the determination of generational spread in the affected families. It will help in contextualizing the care of these patients to their families with health promotion and prevention activities in their at-risk relatives. Consequently, primary care physicians in the frontline must become comfortable in the use of these very important tool.

Keywords: Genogram, hypertension

Introduction

Hypertension is one of the most important treatable causes of morbidity and mortality. As at 1999, the World Health Organization stated that hypertension should be considered a pandemic as it is seen in all races, cultures, gender and even ages [1]. Epidemiologically, hypertension has no limits or boundaries and is present and evident in every area and region of the world [2].

Numerous non-communicable diseases exist, most with no known cure, like hypertension. Its disabling complication which, a frequent health problem and the financial burden of lifelong medications to the patient and family, make this condition a top ranking public health priority [3]. In one study, about 3% of these hypertensives were shown to have died from complications within a year. Some essential factors have been observed to play a role in the development of hypertension include; family history, alcohol intake, cigarette smoking, obesity, environmental and community related factors like family size [3, 4].

Families share histories and these histories can influence each family member's present, as well as their future well being. Caring for families is one of the defining characteristics of family practice and interviewing the patients with regards to their families is rudimentary to the management of chronic illnesses.[5] Hypertension, as a chronic cardiovascular disease affects the family, whether family members are aware of it or not. This is because families share: risk, similarities in lifestyle, environment, diet, financial supplies, ability to cope with illness and generational implications with familial traits of illness [5, 18]. Family history is the best general tool for assessing a patient's risk for inheritable conditions or conditions that run in the family as an individual's family history can identify potential familial and genetic vulnerabilities of diseases and lifestyle influences [6, 18]. A positive family history of hypertension is defined as one or two parents having hypertension and or taking antihypertensive treatment [7].

An important family tool for the assessment of an individual's interactional, interrelational, familial and phenotypic patterns within family system is the genogram commonly used in family practice. The genogram is a visual multigenerational representation of familial relationships and patterns of behavior. It highlights family patterns of physical and mental health conditions, provides visual references of family pattern of disease and can be used as a patient self-report form [8]. Family Medical Genogram provides provide a quick and

useful context in which to evaluate an individual's health risks. Knowledge of diseases and conditions that occur within a family can give a health care team invaluable information that may aid in a swift, accurate diagnosis and treatment of health problems. And, a knowledge of diseases and illnesses that "run" in families can give individuals an important head start in pursuing effective preventive measures [9]. A medical genogram is helpful in determining patterns of disease or illness within a family. The family medical genogram can also significantly facilitate diagnosis and treatment planning as well as enhance the doctor-patient relationship [10, 18].

Physicians and health care providers do not routinely develop their patients' family medical genogram as part of the management protocol of hypertension and other chronic illnesses. This will help in predicting the possibility of disease spread along family lines. The ability to predict generational spread of hypertension or any debilitating health conditions for that matter can serve as a basis for instituting health prevention and health promotion activities for such identified at risk individuals and families specifically, but also populations and the health seeking-public in general. This can consequently improve health indices and quality of life of the population.

This study set out to establish the prevalence of generational spread of hypertension among hypertensive patients using the Family Medical genogram.

Materials and Methods

The study was carried out in the GOPC of the University of Calabar Teaching Hospital, located in Calabar Municipality. The GOPC is the "gateway" into the Hospital, offering a walk in policy with no referrals needed to see a Physician. Primary care and primary healthcare services are given to patients in an unselected manner

The city of Calabar is the capital of Cross River State, in the Niger Delta, south south region of Nigeria. It is a fast growing city with a population of about 371,022 made up to 186,607 males and 184,415 females [11].

The catchment area of Hospital includes the entire Cross River State, the western part of the Republic of Cameroun and neigbouring states of Benue, Ebonyi, Abia, Akwa Ibom states. The major ethnic groups in Calabar are the Efiks, Efut and Quas. There are also a very significant number of Ibibios, Annangs and Igbos from neighbouring states. The University of Calabar Teaching Hospital is the only tertiary health institution in Cross River State. It is made up of various specialties, subspecialties and administrative units with a bed capacity of 1000. It offers Residency training in various specialties including Family Medicine.

This was a hospital based descriptive cross-sectional study. The participants were adult hypertensive patients attending the General Outpatient Clinic of UCTH, Calabar who met the inclusion criteria and gave their consent.

The sample size for the study will be calculated by applying the simple proportion.

formular: (Leslie and Kish formula) $n = \frac{z^2pq}{e^2}$

where n = the desired sample size; z = the standard normal deviate usually set at 1.96 which corresponds to the 95% confidence level; p =proportion in the target population estimated to have the desired characteristics (Hypertensive patients) estimated from the age-adjusted prevalence of 14.5%. [20]. consequently q =1.0 – 0.15 = 0.85

and e = standard error/degree of accuracy desired 0.05

Therefore $n = \frac{1.96^2 \times 15 \times 85}{5^2} = 195.92$

n = 196 subjects

Ten percent of the calculated sample estimate was added to account for attrition, errors and omissions. The total sample size used was therefore 216 subjects.

The systematic random sampling method was used with a sample interval of 2 which meant that every other eligible subject who gave consent was selected for the study.

A structured questionnaire was developed and used to assess patients that presented at the General Outpatient Clinic of the UCTH. The questionnaire consisted of the patients socio-demographic data, family history and other related hypertensive information. The respondents had their routine care for Hypertension which included blood pressure, pulse, along with height and weight for BMI estimation. All the patients with a positive family history of hypertension had their three generational medical genogram constructed using the GenoPro 2011 software.

Data generated from the study was analyzed using the Statistical Package for Social Sciences (SPSS) 18.0 software and the GenoPro 2011 software (for genogram; results). Results were expressed as frequencies, proportions, percentages and some llustrated using graphs and pie charts.

The study was approved by the Health Research Ethics Committee of the University of Calabar Teaching Hospital (UCTH).

Results

A total of 216 hypertensive patients who met the inclusion criteria and gave consent were recruited and participated in the study out of which there were fifty-eight (26.85%) respondents with a family history of hypertension.

Socio-demographic characteristics of recruited Hypertensive Patients (n=216)

Variables	Frequency (n)	Percentage (%)
Sex		
Male	*66*	30.6
Female	150	69.4
Age 21 – 30 31 – 40 41 – 50 51 – 60 61 - 70 Marital status	 3 12 60 100 41	 1.4 5.6 27.8 46.3 18.9
Single	10	4.6
Married	149	69.0
Divorced	5	2.3
Widowed	*52*	24.1
Occupation		
Trading	73	33.8
Farming	27	12.5
Student	2	0.9
Civil servant	88	40.7
Other specify	26	12.1
Education		
No Education	40	18.5

Primary	64	29.6
Secondary	57	26.4
Tertiary	55	25.5
Duration of Hypertension Less than 2years	64	29.6
>2-4 years	94	43.5
>4-6 years	29	13.4
>6-8 years >8-10years	16 13	7.4 6.1
Religion Christian	209	96.8
Muslim	5	2.3
Traditional African	2	0.9

Table 1 shows the socio-demographic characteristics of studied hypertensive patients. About two-thirds of the subjects were females 150(69.4%), majority 149(69%) were married, Christians 209(96.8%). Primary and secondary education ranked highest in terms of educational attainment amongst participants with 64(29.6%) and 57(26.4%) respectively. This was followed by tertiary education 55(25.5%). Those without any formal education were only forty in number (18.5%). The distribution of illness durations amongst respondents showed the class interval of >2-4years 94(43.5%) had the highest population with the class interval of >8-10 years 13(6%) having the lowest population of respondents. In terms of occupation 86(40.7%) of the recruited participants were civil servants which was closely followed by trading with 73(33.8%). Students and farming accounted for 29(13.4%) of the respondents.

Table 2 represents some of the socio-demographic characteristics of patients with a positive family history of hypertension. Amongst this group of patients, 34(58.6%) were female while 24 (41.4%) were male. The majority of patients with a positive family history of hypertension fell within the age group of 45-59 years with a total of 37(63.9%) patients. The educational attainment revealed most of the respondents had either secondary 35(60.4%) or tertiary 20(34.5%) education.

Table 2: Some Socio-demographic variables seen amongst Hypertensive Patient with a positive Family History (N=58)

Variables	Frequencies (n)	Percentages %
Sex		
Male	24	41.4
Female	34	58.6
Age (Years)		
20 – 24	1	1.7
25 – 29	3	5.1
30 – 34	2	3.4
35 – 39	4	6.9
40 – 44	3	5.2
45 – 49	12	20.7
50 – 54	14	24.1
55 – 59	11	19.1
60 – 64	8	13.8
Occupation		
Student	1	1.7
Civil servants	21	36.2
Trading	24	41.4
Farming	12	20.7
Education		
No education	1	1.7
Primary	2	3.4
Secondary	35	60.4
Tertiary	20	34.5

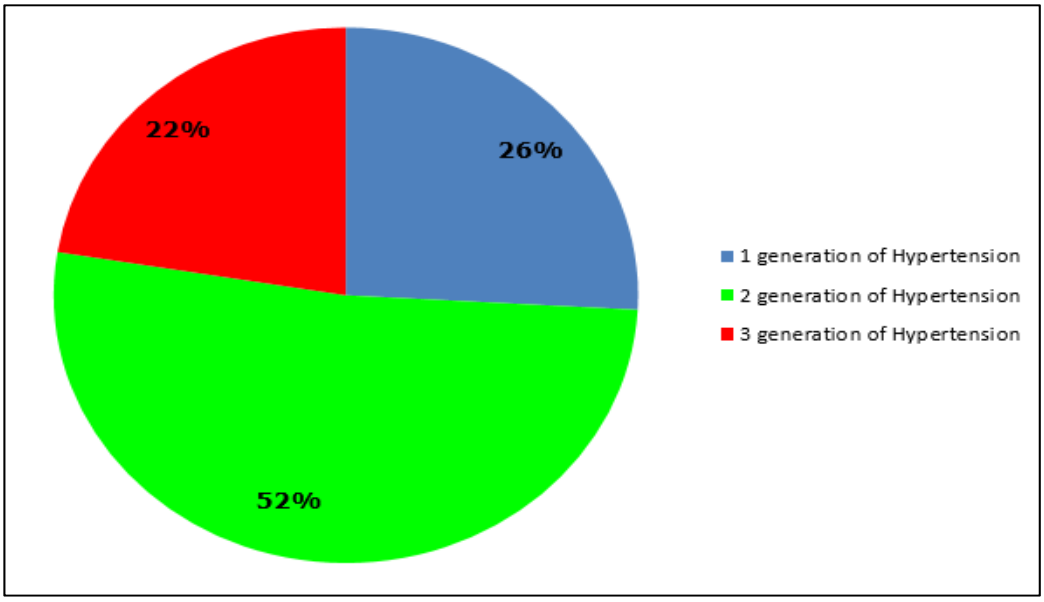

Fig 1: Generational spread of Hypertension amongst Patients with a Positive Family History of Hypertension (n=58)

The generational spread of hypertension amongst patients with a positive family history of hypertension using the Family Genoogram (Geno Pro 2011) is shown in figure 2. Out of the 58 patients with a positive family history of hypertension, 15 (26%) respondents had a positive family history over one generation, while 30 (52%) of the respondents had a positive family history of hypertension spanning two generations. The remaining 13 (22%)

respondents had a positive family history of hypertension spanning three generations.

The respondents with a positive family history were further asked to recall further information concerning their family members who had hypertension. This is shown in table 3. Majority of the respondents could remember the age of onset of hypertension in the family member (37, 63.8%) with most aged from 50 years and above, while the rest couldn't remember the age of onset of hypertension in the family member(s).

Table 3: Characterisation of Clients recall of Positive Family Member History of Hypertension (n = 58)

Parameter		Frequency	Total (%)
Family member age at onset of HTN	20 – 29	0	
	30 – 39	2	
	40 – 49	9	
	50 – 59	19	
	60 and	7	37 (63.8)
	Can't remember	21	21 (36.2)
Family member age at death from HTN	20 – 29	0	
	30 – 39	1	
	40 – 49	3	
	50 – 59	8	
	60 and	10	22 (37.9)
	Can't remember	36	36 (62.1)
Recall that family member had complications from HTN			
	Yes		32 (55.2)
	No		26 (44.8)

There were thirty subjects (55.2%) who recalled that their family member suffered from complications of hypertension while the rest (26, 44.8) could not. A good number of subjects (22, 37.9%) lost a family member from hypertension with most of these deaths occurring in those aged 50 years and above.

Discussion

Family genogram is a family tool that can be adapted to many different human circumstance and clinical settings [13]. When used in clinical settings it is called the Family Medical genogram (or simply Medical Genogram). It is a tool used to help patients and their families recognise disease patterns in their past, present risk and risk to future generations and the Physician as a basis for advocating counselling and health education [9, 14]. The assumption is that Family members share genes, behaviors, lifestyles, and environments that together may influence their health and their risk of chronic disease.[18] This very valuable family tool was developed by Monica Mc Goldrick (a family therapist) and became popular with her publication along with Randy Gerson of their book 'Genograms in family Assessment' in 1985 [14]. While the use of the genogram has since then been on the rise, there has been paucity of studies in our setting on its utilization by primary care physicians in our setting.

The study found that only 58 (27%) respondents were able to recall and give a family history of hypertension spanning between one to three generations. This was despite the fact that majority of the respondents had been diagnosed and been on treatment for hypertension for over 2 years. This was made of 62.1% famers and traders. This was representative of the study population in which majority of them had secondary education and below (74, 5%). The findings in this study are similar to what was observed in The Gambia, where low literacy levels and a poor knowledge of illness of patients by family members were significant.[15] Possible explanations for this finding could be that most family members do not know the disease a relative in the African context suffers from mostly because of low level of formal education, poor patient education about their illnesses, and a poor family/medical genealogy within the family. The practice of 'oral tradition' where information is passed to the next generation verbally is prone to forgetfulness and distortion of facts despite the fact that most participants with a positive family history of hypertension (about 90%) had secondary and tertiary education. It is also possible that the actual prevalence of positive generational may be much higher than reported because it has been documented in several studies that patients' recall of their family history is frequently inaccurate [9, 16, 17]. Consequently, many authorities emphasize that before physicians make testing or management decisions based on the patient's family history, effort should be made to confirm the reported illnesses (e.g., interviews of additional family members, review of medical records, autopsy reports, death certificates) [9, 14].

The family Genogram tool was used in this study to determine the generational spread in the 58 (27%) of patients with a positive family history. Several of these respondents could not remember the age of onset of hypertension in the family member (21, 36.2%), age at death of a relative from hypertension (36, 62.1%) or its complications (26, 44.8%). These findings are similar to those found in Slovenia by Jones *et al* that patients could not remember the history of their medical conditions and recall even their drugs despite having no cognitive impairments. In that study only 22% could correctly name the medication they were taking while just 34% could name the medical condition associated with their drugs [19]. It is even the more difficult for such patients to share their medical information with their family. Suggested reasons may include lack of understanding of their medical information or attempting to memorize [19, 20]. This highlighted the poor knowledge of family history as regards illness experienced by patients within their family. Beyond health care provision by health workers, patients must also be encouraged to develop a genealogy of family health and other vital events which when shared with the health care

practitioners can be very useful in the development of management guidelines [18]. This finding will contradict any effort based on the family systems theory which agrees that individuals cannot be understood in isolation from one another, but rather as a part of their family, as the family is an emotional unit. Families are systems of interconnected and interdependent individuals, none of whom can be understood in isolation from the system [9, 13, 20,]. Consequently, understanding the generational spread of any disease can help in managing family members at risk especially in disease prevention and health promotion.

Conclusion

There is under-utilization of family tools in the management of patients with chronic illnesses like hypertension. Family tools like the Medical genogram can be a valuable tool to help frontline physicians unravel hidden risk of certain disease to a patient. This can then be a basis to intervene through health promotion and health education activities. This will consequently reduce the disease burden in at risk individuals and improve their quality of life. Frontline physician must educate themselves in the use of such family tools like the medical genogram in patient management

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