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EDITORIAL

Solutions must be based on knowledge, and the act of acquiring and evaluating knowledge, is a continuous one. In academic field man will continue to probe into the unknown so as to establish facts. Therefore, in any academic writing presentation of facts relating to the past and present and even the future issues are put forth for scholars to benefit.

Academic writing is a sort of discipline of human mind because total effort is devoted to scholarly papers and it also helps to develop abstract minds. Every scholar must be aware that academic writing is a diligent and systematic attempt to provide answers to teething questions which will serve as open doors to future researchers.

Everything in life depends on value judgement and your values determine your priority while your priority determines your output. It is up to every one to learn as much as he can about the facts and then make up his/her own mind about the value judgements which he/she will place upon them. Again I congratulate all authors whose articles appear in this volume on your scholarly output and I wish you keep it up. I thank GOD ALMIGHTY who has given us good health and life to produce another volume which is Volume 2 No. 2, August 2007. HIS Holy Name be praised forever.

I seize this opportunity to advice our colleagues to be more inclined to research work which will enhance the standard and value of the journal the more. Once more the Editorial Committee appreciates the genuine efforts of the Vice Chancellor Professor Shehu Usman Abdullahi for his maximum support for sustenance of this journal. Finally the efforts put up by the Dean of the Faculty of Education, Professor F. D. Kolo are highly commended and appreciated. We will continue to do our best in the production of this journal at the appropriate time.

Thank you.

Prof. B.A. Ladani
Editor-in-Chief

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THE ROLE OF EXERCISE IN THE CONTROL OF BLOOD PRESSURE AMONG HYPERTENSIVE PATIENTS IN ZARIA, NORTHERN NIGERIA

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Abstract

The prevalence of hypertension is on the increase globally, being higher in females than males. Aerobic exercises have been reported to be beneficial in bringing down high blood pressure significantly in most patients, especially in those with mild and moderate hypertension. This study was to evaluate the role of exercise in the control of blood pressure in hypertensive patients as seen in the cardiac clinic in Zaria, Nigeria. A sample size of 288 patients, attending cardiac clinic in ABU Teaching Hospital, Zaria, was selected randomly. The instruments for data collection were records from case files of patients and self-constructed-administered-17-item questionnaire. The mean age of the hypertensive patients was 42.6 years and ranged from 16 to 65 years. Most of the hypertensive patients were females (62.5%), business people (60.8%), and married (69.4%). Majority (73.3%) of them have been diagnosed for over six years. Many of the patients (n=126) adhered to planned exercises as a non-pharmacologic control of their high blood pressure in addition to prescribed anti-hypertensive drugs. Some of these patients experienced decrease in blood pressure and associated this with the exercise regimen. Gender and occupations of patients appear to influence involvement in exercises. Findings show that exercise is a contributor to the management of high blood pressure with, often, silent advantages of reduced cost of treatment and fewer drug-related side effects. Occupation and age of hypertensive patients strongly correlate with adherence to exercise regimen. Control of hypertension should therefore be emphasising more planned exercise programme as adjunct component of high blood pressure management.

Key words: Exercises, management of hypertension, non-pharmacologic control of high blood, hypertensive patients.

Introduction

Amidst varied definitions, hypertension is a persistent systolic blood pressure greater than or equal to 140 mmHg and or diastolic blood pressure greater than or equal to 90 mmHg. About 972 million (26.4%) of the world's adult population has hypertension, with a predicted increase of about 60% (1.56 billion) in 2025 (Agboola, 2004) with majority 639 million) are in the developing countries. The highest prevalence is found in Poland (68.9% among men, and 72.5% in women) and

the lowest in India, 3.4% and 6.8% among men and women respectively (Kerny, 2004). In Nigeria, an incidence of 3.8% in all patients reporting at the General Outpatient Department of Ahmadu Bello University Teaching Hospital, Kaduna, was reported (Jain, 2006). Age and gender correlate with the incidence and prevalence of hypertension. For example, it is higher in men than women in younger ages and higher in women than men in older ages.

In most cases, the management of hypertension consists of drug therapy,

diet, and weight control, modification of lifestyle, and an exercise regimen. Two or more of these approaches are often combined, and exercise usually forms a major component. As far back as 1969, Sir Stanley had suggested that in "the early stages of established hypertensive disease, rest in bed is not important; there is no evidence that moderate exercise is harmful and walking or playing golf within limits of dyspnoea (difficulty in breathing) or undue tiredness is to be discouraged." Earlier in 1967, Hector and Malpas said that "the life led by the (hypertensive) patient should be quiet but moderate activity is desirable." These positions, even in the past, have emphasized the need for some planned activity in managing high blood pressure. Recently, a nurse theorist, Phipps (1991) advised: there is a need to teach the (hypertensive) patients to participate in a regular aerobic exercise programme three times a week, consisting of 20 to 45 minutes of activity, with warm up and cool down procedure, in the control and management of hypertension. Pescaletto (2006) also recommended exercise plans, starting gradually from simple to complex at particular times, and lasting for 30 – 60 minutes, three to five sessions a week, for improving the health of the cardiovascular system. Exercises, such as brisk walking, jogging, running, cycling, swimming, skipping and other aerobic exercises, reduce resting blood pressure in both normo- and hyper-tensive individuals.

Studies by Hagbery, Park and Brown (2006) pointed out that regular low to moderate intensity exercises are as beneficial as higher intensity exercises. Systolic and diastolic pressure reductions average approximately 11 and 8 mmHg respectively in 75% of hypertensive patients (ibid) with a range of 2.6/1.8 mmHg – 5.0/6.0 mmHg following regular exercises (Pescaletto 2006). He also opines that moderate intensity aerobic exercise lowers blood pressure safely and effectively in patients with mild to moderate hypertension, even in patients with severe hypertension and left ventricular hypertrophy with substantial reduction in antihypertensive medication.

In view of this, this study was carried out to evaluate the role exercise plays in controlling blood pressure in hypertensive patients attending the cardiac clinic in Ahmadu Bello University Teaching Hospital, Zaria. This was with a

view to recommending more definite exercise programme as a major component of the management of high blood pressure.

Methodology

a) *The sample size and sampling technique*

The study was conducted in the busy cardiac clinic of the Ahmadu Bello University Teaching Hospital, Zaria, on patients attending the clinic for treatment for hypertension. A sample size of 288 hypertensive patients was selected, calculated on the basis of the incidence of hypertension in Nigeria (25%) and confidence interval of 95%. The data were collected from the 288 patients over four weeks through random sampling procedure. All the patients were clinically diagnosed either in the hospital or on referral from other levels of health care facility. They were advised to engage in some forms of exercises such as brisk walking, jogging, running, cycling, and skipping by the doctor.

b) *The instruments for data collection*

Records (case files) of patients were scrutinised to obtain information to provide answers to the study objectives. Additional information was derived from a 17-item self-constructed-administered questionnaire for the patients (which also served as interview schedule for the non-literate patients) to provide self report to complement patient records. The patients were not supervised during the exercises. Information from both instruments was coded and analysed using SPSS package with Chi-square analysis (set at 0.05) as well as Yule's Q analysis.

Results

The socio-demographic data (Table 1) of the hypertensive patients shows that their ages ranged from 16 to over 60 years, with a mean of 42.6 years. The most affected age bracket was 51 -60 years (26.4%). The incidence in age brackets 21 – 30 years, 31 – 40 years and 41 – 50 years was similar (20.1%, 21.2%, and 20.8% respectively). More females (62%) than males (38%) were affected. The data also showed that hypertension was more common (60.8%) in people engaged in business and other commercial activities. Married people or those who had married before (i.e. widows)

constituted the majority (72.9%) of hypertensive patients attending cardiac clinic in Zaria. Most of the patients (53.0%) have been diagnosed for the past 6 to 10 years while seventy-four of them (25.7%) were diagnosed within the last five years. Only 21.3% have long standing episodes of over ten years.

All the patients (N = 288) were on anti-hypertensive medications, and they had been advised on diet and exercise. Fifty-six percent of them reported adhering to advice on dietary modification, essentially with emphasis on reduced sodium (table salt) intake, while the remaining 44% (n = 126) said they engaged in exercises to reduce their high blood pressure, though they were not supervised. The patients that adopted the advice on exercise as a therapeutic modality described the types of exercises they usually engaged in. Majority (69%) (n = 87) of them said they did (brisk) walking while 17 (13.5%) of the patients engaged in what they simply described as "moderate exercises." The rest (17.5%) engaged in all (unspecified) types of exercises. Table 2 shows the duration and weekly regimen of such exercises. Half of them (50%, n=63) spent between 16 and 30 minutes doing exercise. Majority (63%) of them did it three times a week, 27% (n = 34) twice, and 10% (13) just a once a week.

The type of occupation and gender of patients influenced the use of exercise as a blood pressure-reducing option. In Table 3, it is shown that students (100%) and civil servants (80.0%) engaged more in exercises. Housewives (23.3%) and business people (38.9%) least did exercise. Patients' occupational affiliation is statistically significant in the adhering to exercise regimens ($X^2 = 43.1$, $df = 3$, at 0.05, critical value = 7.815). Similarly, the gender-exercise association was evaluated. It is shown that more males (28.5%) than females (23.3%) of the 288 patients do exercises. Of the 126 that do exercises (as seen Table 2), 82 (65.1%) of them are males, the rest (34.9%) are females (Table 4). Statistically, it is found that a very strong positive relationship exists between gender and involvement in exercise regimen (Yule's $Q = 0.80565$; $X^2 = 72.73$, $df = 1$, at 0.05, critical value = 3.841).

All patients (N = 288) were asked to rate their therapeutic responses (i.e. level of blood pressure) to the treatment

being given: whether the BP was down, remained the same or increased. Table 5 shows that out of the 288 of them, majority of the patients (n=180; 62.5%) believed that there were reductions in the levels of their blood pressure. They all attributed this perceived drop in blood pressure to the use of anti-hypertensive drugs (100%, n=180), in addition to diet modification and exercise (n=50, 28% each). However, many of them (44%) believed that the use of only anti-hypertensive drugs accounted for the perceived decrease in blood pressure. This self assessment (self reports) of the patients was corroborated with records of blood pressure in the patients' case files (Table 6) for four consecutive clinic attendances. It was found from the clinic records that only 176 (61.1%) of the patients' blood pressure readings within this period actually showed some decrease, ranging from 5 mmHg to 30 mmHg. These Records when compared with the responses of the patients to administered questionnaire indicated that among the 176 whose blood pressures actually dropped, 120 of them reported being engaged in some form of planned exercises. A few reported increases in their blood pressures following exercises, and were advised by the doctor to stop such exercises.

Discussion

The age distribution of the hypertensive patients shows that most of the patients are between 51 and 60 years. Interestingly, ages 21 – 30 and 31 – 40 years were also relatively high (20% – 21%). These age groups have often been associated with high level of developmental stress of life situations and this may account for the high incidence of high blood pressure among these young ages. Similarly, hypertension early in life is becoming a common phenomenon in most urban centres in Nigeria.

The findings also showed that majority of patients were women (62.5%). In related studies in Poland, India and Nigeria (Kerny, 2004; Jain, 2006), similar results were found among women. These assertions have been linked to several factors. For example, women have the tendency of reporting more frequently than men. This in itself has been related to male egotism and the claim of being too engaged in the 'bread-winning' activities. Others believe that the higher incidence

and prevalence in women can be associated with physiologic events in their life cycle. Most of the patients (69%) were married. This finding tends to portray marriage as a factor in hypertension, probably due to its related stress and strains (Olatawura, 2002; Isichei, Okeahialam, Zamani, and Dagona, 2000).

The results showed a higher incidence in people engaged in private business activities (60.8%). Such economic ventures have been generally associated with high level of stress and its physiologic responses including increased blood pressure (Kozier and Erbs, 2000). Majority (74.3%) of the patients were diagnosed over six years ago with 53% within 6 – 10 years. A good number (25.7%) were diagnosed in the past five years. This suggests that hypertension is a common health problem in the general population.

Of the 288 patients, only 126 (44%) combined exercise and drug therapy as their control for high blood pressure. The exercises engaged in were mainly brisk walking and jogging. The other exercises were unspecified but simply described as "all exercises" and "moderate" exercises (17.5% and 13.5% respectively). Papademetou (2006) had demonstrated that moderate intensity aerobic exercises (including walking, jogging) reduce blood pressure in mild to moderate hypertension). Hagbery, Park and Brown (2006) presented similar findings.

Most of the exercises were reported to have lasted between 30 and 45 minutes (73.0%) per session, and were done three times a week (63%). These rates of exercise duration and frequency correspond to suggested therapeutic regimens that are believed to bring down blood pressure (Phipps, 1991; Pescaletto, 2004). According to Pescaletto, exercises lasting between 30 – 60 minutes three to five a week help to reduce high blood pressure significantly. The advantages of such exercise-induced lowered blood pressure are many. For instance, when the control of hypertension is managed with exercise, lower doses of anti-hypertensive agents will be required for treatment, and therefore there will be fewer side effects of these drugs (ibid). In addition, there are also economic benefits: because the overall dosages of antihypertensive drugs are reduced, there is a decreased financial cost of treatment to both the patients and the overall health care system since

patients need to buy less quantity of the drugs. The general physiologic improvement which exercises cause in individuals is an added benefit. For example, Woods, Froelicher, Halpenny and Motzer (1995) had shown that the systemic enhancement brought about by (aerobic) exercises is vital to optimal functioning of the cardio-vascular system and the 'whole person'. In response to question on the status of their individual blood pressure levels, 62.5% of patients believed their BP had dropped, and they all attributed this to the use drugs (100%, n=288) in combination with diet modification (28%) and exercise (28%). This shows that all the patients are on, at least, one type of anti-hypertensive drug. However, only (44%) linked the decreased BP to the use of anti-hypertensive drugs alone. The implication of the 28% of the patients who acknowledged the place of exercise in their treatment is that some patients are aware of and believe in the benefits of exercise in controlling high blood pressure. This finding is important for future (health) education to patients by health care providers who are directly involved in patient care, especially the nurses and the physicians.

The patients' recorded blood pressure measurements for four consecutive clinic attendances (intervals of 2 to 3 months follow-up appointments) showed that majority (61.1%) recorded some decrease in their blood pressures, ranging from 5 mmHg to 30 mmHg. The records indicated that among the 176 patients whose blood pressure actually dropped, 120 of them reported being engaged in some form of exercise planned exercise. Patients who associated exercise with reduction in blood pressure actually had decreased blood pressure as indicated in their clinic records. Longitudinal and experimental studies may be necessary to further determine the beneficial effects of exercise in the management of hypertension where patients will be supervised.

Conclusions

The responses from patients and records from the patients' case files suggest that exercises have the tendency of decreasing elevated blood pressure in hypertensive patients. It is therefore recommended that activities, such as client teaching by nurses, doctors and physical therapists, be incorporated into the general

framework of management of patients with hypertension, especially in stable patients like those attending out-patient cardiac clinics or those receiving community-/home-based care. In addition, certain socio-economic variables, namely, occupation and gender, which strongly correlate with exercising, should critically be considered in future plans for high blood pressure control.

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Table 1: Socio-demographic Characteristics of the Hypertensive Patients

Age (in years)	Frequency	Percentage (%)
11-20	10	3.5
21-30	58	20.1
31-40	61	21.2
40-50	60	20.8
51-60	76	26.4
60-70	23	8.0
Total	288	100
Sex		
Female	180	62.5
Male	108	37.5
Total	288	100
Marital Status		
Single	78	27.1
Married	200	69.4
Widows	10	3.5
Total	288	100
Occupation		
Business	175	60.8
Civil servant	40	13.9
Housewives	60	20.8
Students	13	4.5
Total	288	100

Table 2: Length/Duration of Exercise

Duration	Frequency	Percentage (%)
At least 15 mins	34	27.0
16 - 30 mins	63	50.0
31 - 45 mins	29	23.0
Total	126	100
Weekly regimen		

Once a week	13	10
Twice a week	34	27
Thrice a week	79	63
Total	126	100

Table 3: Occupation and Involvement in Exercise Regimen

Occupation of Patients	Exercise		Total
	Yes	No	
Business/Trading	67	108	175
Civil servant	32	8	40
Housewives	14	46	60
Students	13	0	13
Total	126 (43.8%)	162 (56.2%)	288 (100)

$X^2 = 43.1$, $df = 3$, at 0.05, critical value = 7.815

Table 4: Gender and Exercise

Sex	Exercise		Total
	Yes	No	
Female	82 (28.5%)	26 (9.0%)	108 (37.5%)
Male	44 (15.3%)	136 (47.2%)	180 (62.5%)
Total	126 (43.8%)	162 (56.2%)	288 (100)

Yule's Q = 0.80565

$X^2 = 72.73$, $df = 1$, at 0.05, critical value = 3.841

Table 5: Records of Blood Pressure status

Level	Frequency	Percentage (%)
Down	176	61.1
Same	88	30.6
Increased	24	8.3
Total	288	100

Table 6: Patients' Perceived Treatments responsible for Drop in Blood Pressure

Treatment	Frequency	Percentage (%)
Exercise and Drugs	50	28
Diet and Drugs	50	28
Drugs alone	80	44
Total	180	100