THE EFFECT OF STRUCTURED COUNSELLING ON LIFESTYLE MODIFICATION MEASURES AMONG ADULT PRE-HYPERTENSIVE PATIENTS IN A TERTIARY HOSPITAL IN NORTH CENTRAL NIGERIA.

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ABSTRACT

AIM: The study was undertaken to determine the effect of structured counseling on lifestyle modification measures among adult pre-hypertensive patients.

METHODS: The study was a randomized controlled study involving pre-hypertensive adults aged 20 years and above presenting in GOPC of JUTH. Participants were consecutively selected and randomized to an intervention group that was offered structured counselling on lifestyle modification and a control group that was offered routine advice only. Participants were followed up monthly for twelve weeks and adherence to lifestyle modification measures noted. The proportion of observed changes were analysed using chi square and Fischer's exact tests. Data was analyzed on an intention-to-treat basis. A p-value of <0.05 was considered significant in all analyses.

RESULTS: Changes in lifestyle measures was notably more among the intervention group, especially in the dietary intake of fruits and vegetables and aerobic exercise.

CONCLUSION: There is a better adherence to lifestyle measures with a more structured counselling.

KEYWORDS: Structured counselling, General advice, Lifestyle modification.

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INTRODUCTION

Prehypertension is defined as systolic blood pressure of (SBP) 120mmHg to 139mmHg or diastolic blood pressure (DBP) of 80mmHg to 89mmHg, based on "two or more properly measured seated blood pressure (BP) readings on each of two or more office visits".[1] If SBP and DBP fall into different categories, the category associated with the higher of the two pressures is applied. The BP category "prehypertension" was first introduced by the Seventh Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC-7) in 2003, replacing former categories of "high normal" and "above-optimal" BP.[1] The rationale for redefining this category was to emphasize the excess risk associated with BP in this range and to focus increased clinical and public health attention on prevention.

Management of prehypertension by lowering BP into a more optimal range can be expected to lower risk. The risks associated with prehypertension are in part related to the tendency of BP to increase with age in industrialized societies. Thus, prehypertension is a precursor of clinical hypertension and consequently of the cardiovascular disease (CVD) and renal risks associated with elevated BP (ie, SBP ≥140 or DBP ≥90 mm Hg).[2,3] In addition, the relationship between BP and CVD risk is continuous over the whole range of BP, and therefore, prehypertension itself is associated with BP-related morbidity and mortality. Thus, the goals of treating prehypertension are to prevent hypertension and to reduce the excess CVD risk associated with BP in this preclinical range.

Current recommendations for the prevention and treatment of high BP emphasize non-pharmacological therapy, also termed "lifestyle modification". JNC-7 recommends lifestyle modification for all patients with hypertension and prehypertension.[4-6] These modifications include:

1. Reducing dietary sodium to less than 2.4g per day.
2. Increasing exercise to at least 30 minutes per day, four days per week.
3. Limiting alcohol consumption to two drinks or less per day for men and one drink or less per day for women. One standard drink

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contains 10g of alcohol and one bottle of beer contains 26g of alcohol (One bottle of beer = 2.6 standard drinks).
4. Following the dietary approaches to stop hypertension (DASH) eating plan (high in fruits, vegetables, potassium, calcium and magnesium, low fat and salt).
5. Achieving a weight loss goal of 4.5kg or more.
6. Cessation of smoking (not recommended in JNC 7).

METHODOLOGY

The study was conducted between February to May 2012 among individuals aged 20 years and above presenting in the General Outpatients Clinic (GOPC) of Jos University Teaching Hospital (JUTH). The study was a randomized controlled trial, comprising an intervention group that received structured counseling on lifestyle modification and a control group that was only advised on lifestyle modification. Using the Power of 80% and a 95% confidence level, the sample size for means was used for the study and 62 participants were recruited, 32 in the intervention group and 30 in the control group.

Patients with a systolic blood pressure of 120mmHg to 129mmHg and/or diastolic blood pressure of 80mmHg to 89mmHg were included. Information collected included the participants' sociodemographic data, history of alcohol ingestion, hypertension and smoking, current exercise activity and a 24-hour dietary recall.

Blood pressure readings were recorded to the nearest even number and the mean of three recordings computed. All patients in the intervention group were counseled and advised concerning diet and exercise using a structured format. They were given written diet and exercise instructions in either English or Hausa and asked to keep an exercise diary. They were asked to return for follow up at four, eight and twelve weeks. At each follow up visit, the instructions were reviewed and repeated according to the structured format in order to reinforce them. The blood pressure was recorded at each follow up visit as described above. The duration of exercise each day was also recorded. The control group did not receive any structured counseling concerning diet and exercise. They were only advised on exercise and a healthy diet. Data was analysed using Epi Info version 3.5.3 (Centres for Disease Control and Prevention, Atlanta, Georgia, USA).[7] Background descriptive analysis was done to compare both groups. The primary outcome variable of interest was blood pressure. The proportions of categorical variables were compared using the $\chi 2$ test and the Fisher's exact test. A p value of 0.05 was considered significant in all analyses.

RESULTS

Sixty two subjects fulfilled the inclusion criteria and participated in the study – 30 in the control group and 32 in the intervention group. Fifty two completed follow-up (83.9%) while 10 (16.1%) did not complete the study. Of the 10 that did not complete the study, four were in the control group while six were in the intervention group. Three dropped out at four weeks, four at eight weeks and three did not present at twelve weeks. In the control group, one dropped out at four weeks, two at eight weeks and one at 12 weeks while in the intervention group, two dropped out at four, eight and 12 weeks respectively. Analyses were carried out on all participants on an intention-to-treat basis.

Socio-demographic Characteristics

The mean ages of the control and intervention groups were 39.7±9.3 years and 41.3 ± 9.1years (p=0.57) respectively. The age range was 23 to 61 years. Out of the 62 participants in the study group, 18 (29%) were males and 44 (71%) were females. The details are shown in Table 1.

Table 1: Sociodemographic Characteristics of the study participants

	Control group N=30	Intervention group N=32	p value
Mean Age (years)	39.7±9.3	41.3±9.1	p=0.57
Age category(years)			
20-29	4	6	
30-39	10	12	
40-49	11	9	
50-59	4	3	
60-69	1	2	
Gender:			P=0.69
• Male	8	10	
• Female	22	22	
Educational Level:			P=0.93
• None	13	13	
• Primary	3	5	
• Secondary	8	8	
• Tertiary	6	6	
Marital Status:			P=0.2
• Married	27	25	
• Single	3	7	
Religion:			P=0.66
• Christian	20	23	
• Muslim	10	9	
Ethnicity			P=0.65
• Plateau People	18	21	
• Non- Plateau People	12	11	

Alcohol consumption: At baseline, ten (17.1%) participants in the control group and 12 (19.4%) in the intervention group had a current history of alcohol consumption in the form of beer, wine, whisky and local brew, of more than two standard drinks per day and a duration of at least one year. One "standard" drink contains roughly 14 grams of pure alcohol, which is found in: 12 ounces of regular beer, which is usually about 5% alcohol, 5 ounces of wine, which is typically about 12% alcohol, 1.5 ounces of distilled spirits (gin/whisky), which is about 40% alcohol. Post intervention, eight (12.9%) participants in the control group and six (9.7%) in the intervention group had reduced alcohol consumption (p=0.46).

Cigarette smoking: Only one (3.3%) of the participants in the control group had a current history of smoking at least two sticks of cigarette a day for at least a year while the intervention group had one (3.1%) subject who had a similar but previous history of cigarette smoking. The only participant who had a current history of smoking neither stopped smoking nor reduced the quantity of cigarette smoked per day (p=0.81).

Exercise: At enrollment, 15 (24%) of the total participants were involved in some form of regular aerobic exercise, seven (23.3%) from the control group and eight (25%) from the intervention group. The control group exercised for an average of two days per week for an average of 36.7 minutes per day while the intervention group also exercised for an average of two days per week but for an average of 39.8 minutes per day. The most common exercise undertaken was brisk walking in both groups, five (71.4%) participants in the control group and seven (87.5%) in the intervention group. At the end of the study, 48 (77%) of the total study participants were involved in some form of regular aerobic exercise, 21 (43.75%) participants from the control group and 27 (56.25%) from the intervention group (p=0.18).

The control group exercised for an average of three days per week for an average of 35 minutes per day while the intervention group exercised for an average of four days per week for an average of 38 minutes per day. The most common exercise undertaken was brisk walking in both groups, 15 (50%) participants in the control group and 17 (53.13%) in the intervention group (p=0.81). Jogging, skipping, climbing staircases, cycling, tennis, football and other forms of aerobic exercises made up the remaining

Dietary Pattern: Based on a 24 hour dietary recall and estimated from the average equivalent of the DASH diet, the dietary pattern of participants in the study groups were compared. All patients in both groups had less than the expected daily servings of fruits with 61.3% and 56.4% of participants having less than the expected daily servings of vegetables in the control and intervention groups respectively. Of the total study participants, 93.3% of the participants in the control group had more than the expected daily servings of fats and oils versus 87.5% in the intervention group while 66.6% of the control group had more than the expected daily servings of grain and grain cereals versus 71.9% in the intervention group. Only 3.33% of the control group had the expected value for lean meat, poultry or fish against 6.25% of the intervention group. Only 6.67% of the control group had some form of nuts, seeds or legumes at enrollment versus 3.13% in the intervention group. All participants in the study group were taking more than the expected daily servings of more than one teaspoon full of salt either in prepared meals or on the table or both. On completing the study, 44.2% of the control group had the expected daily servings of fruits against 66.4% of the intervention group (p=0.08). The control and intervention groups comprised 41.2% and 51.4% of participants who had the expected daily servings of vegetables respectively (p=0.43). In the control group, 12.7% had the expected daily servings of fats and oils versus 17.3% in the intervention group (p=0.30). The control group was made up of 27.8% who had the expected daily servings of grain and grain cereals which was comparable with 32.9% in the intervention group (p=0.51). Only 39.4% of the control group had the expected servings for lean meat, poultry or fish against 37.3% of the intervention group (p=0.84). On completion of the study, 7.3% of the control group had some form of nuts, seeds or legumes versus 9.4% of the intervention group (p=0.94). All participants in both study arms had reduced their salt intake at the end of the study. Based on a 24 hour dietary recall and estimated from the average equivalent of the DASH diet, the dietary pattern of participants in the study groups were compared at baseline and on completing the study (Figures 1 and 2).

Figure 1: Baseline dietary pattern of the control and intervention groups based on a 24 hour

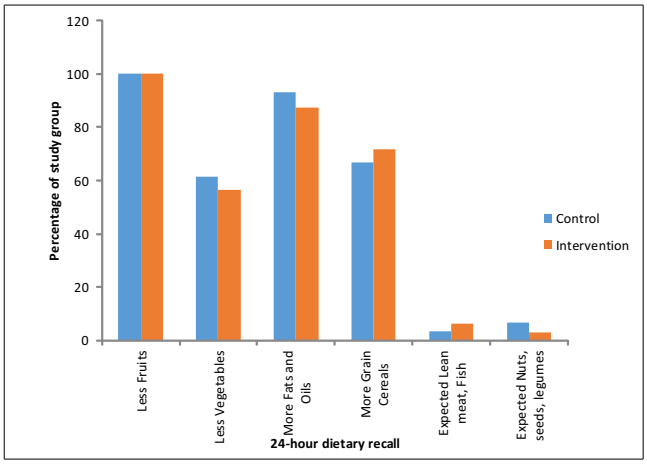
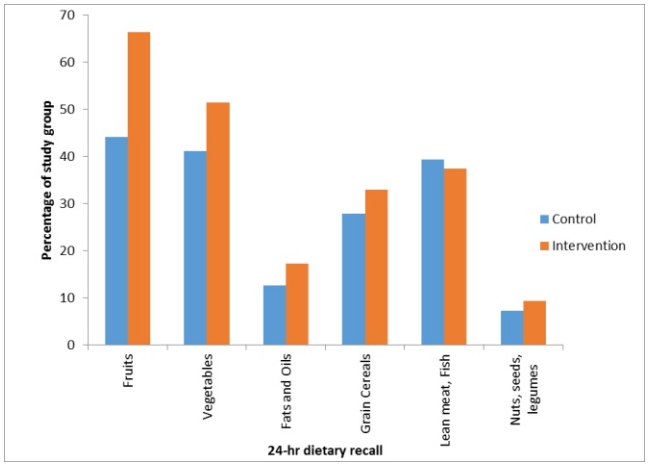


Fig 2. Post-intervention dietary pattern of the control and intervention groups based on a 24 hour dietary recall.



DISCUSSION:

Dietary Pattern: Although there were no statistically significant changes between the two groups, on the average, more of the participants in the intervention group significantly increased their intake of fruits, vegetables, and dairy products and further reduced their intake of grain cereals, saturated and total fats when compared with the control group (Table 5 and Table 7). This was also seen in the DASH trials which showed that dietary intervention was beneficial among pre-hypertensives.[8,9] This was also notable in systematic reviews on counseling to promote healthy diet in adults where improved dietary habits were noted after counseling.[10,11]

Although all participants in the intervention group received a structured counseling on salt restriction, reduction of salt intake did not change significantly relative to the control group. In both groups the reduction in sodium intake was not sufficient to achieve the complete PREMIER and JNC-VII goals of no more than 100 mmol/day (≤ one teaspoon full of salt per day).[12] Palatability concerns of meals may have largely contributed to this poor adherence and this was in keeping with similar other studies.[10-14]

Exercise: Post intervention, there was a higher percentage of participants involved in regular physical activity in the intervention group than the control group and on the average, the intervention group showed an increased duration of such exercise in a day and a higher frequency of days of exercise per week. The intervention group may have had a better outcome conceivably due to better quality of exercise despite the fact that changes in the various forms of exercise among the two groups were not statistically significant.

This outcome was similar to a meta analysis of 54 randomized controlled trials whose intervention and control groups differed in aerobic exercise.[15] A longer period of study and additional research may have shown a statistical significance between the two groups.

Alcohol Consumption: Fifty percent of the intervention group had reduced their alcohol consumption from greater than two standard drinks per day to two standard drinks per day or less compared to 20% in the control group.

More participants in the intervention group had therefore reduced their alcohol consumption. More participants in the intervention group had therefore reduced their alcohol consumption. However, this was not statistically significant. This was similar to findings reported in a randomized controlled trial of general practitioner intervention in patients with excessive alcohol consumption.[16] Overall, the evidence favors moderation of alcohol intake to currently recommended limits as was applied in the present study.

CONCLUSION

This study shows that within a 12 week period, structured counselling on lifestyle modification may not be associated with better adherence to lifestyle changes than routine advice only despite notably more significant changes with structured counselling.

Implication for Clinical Practice:

There is a critical public health need for improved lifestyle intervention programs, including those appropriate for delivery in the clinical setting. Resources need to be developed at a local level to provide counseling to patients and to monitor the advice they are given. A philosophical switch is required whereby more resources would be invested in maintaining health and promoting lifestyle changes.

Implication for Policy Makers:

The enormously high prevalence of chronic disease and adverse lifestyles argues for concomitant public health strategies and policies that affect entire populations. Public policy promoting good health is a vital component of the comprehensive approach required to support and encourage lifestyle changes. This can be implemented at all levels of government and can affect both workplaces and public places.

REFERENCES:

1. Ezzati M, Lopez AD, Rodgers A, Vander Hoorn S, Murray CJ; Selected major risk factors and global and regional burden of disease. *Lancet* 2002; 360: 1347-60.3.
2. Franco OH, Peeters A, Bonneux L, de Laet C. Blood pressure in adulthood and life expectancy with cardiovascular disease in men and women:life course analysis. *Hypertension* 2005; 46:280 –286.
3. Russell LB, Valiyeva E, Carson JL. Effects of prehypertension on admissions and deaths: a simulation. *Arch Intern Med* 2004; 164: 2119–2124.
4. Lloyd-Jones, D. Heart disease and stroke statistics—2009 update: a report from the American Heart Association Statistics Committee and Stroke Statistics Subcommittee. *Circulation* 119, 2009; e21–e181.
5. Chobanian AV, Bakris GL, Black HR; National High Blood Pressure Education Program Coordinating Committee. Seventh report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure. *Hypertension.* 2003; 42:1206 –1252.
6. Akinkugbe O. The Physiologist role in Africa's demographic health transition. Proceedings of the AAPS congress; South Africa, 2000.
7. Centers for Disease Control and Prevention. Epi Info. 2008; 3.5.3. [Cited: April 25, 2008] Available from: http://www.cdc.gov/epiinfo.
8. Appel LJ, Moore TJ, Obarzanek E, Vollmer WM, Svetkey LP, Sacks FM, Bray GA, Vogt TM, Cutler JA, Windhauser MM, Lin PH, Karanja N. A clinical trial of the effects of dietary patterns on blood pressure. DASH Collaborative Research Group. N Engl J Med 2007; 336:1117–1124.
9. Sacks FM, Svetkey LP, Vollmer WM, Appel LJ, Bray GA, Harsha D, Obarzanek E, Conlin PR, Miller ER III, Simons-Morton DG, Karanja N, Lin PH. Effects on blood pressure of reduced dietary sodium and the Dietary Approaches to Stop Hypertension (DASH) diet. DASH-Sodium Collaborative Research Group. N Engl J Med 2002;344:3–10.
10. Pignone MP, Ammerman A, Fernandez L, Orleans T, Pender N, Woolf S, et al. Counseling to Promote a Healthy Diet in Adults: A Summary of the Evidence. Am J Prev Med 2003;24(1):75–92
11. Ammerman A, Pignone M, Fernandez L. Counseling to promote a healthy diet. Systematic evidence review: Agency for Healthcare Research and Quality. Available at: www.ahrq.gov/clinic/serfiles.htm. Accessed 10/05/2017.
12. Appel LJ, Champagne CM, Harsha DW, Cooper LS, Obarzanek E, Elmer PJ, et al. Effects of comprehensive lifestyle modification on blood pressure control: main results of the PREMIER clinical trial. JAMA 2003; 289:2083–2093.
13. Stevens VJ, Obarzanek E, Cook NR, Lee IM, Appel LJ, Smith West D, et al; Hypertension Prevention Trial Research Group. The Hypertension Prevention Trial: three-year effects of dietary changes on blood pressure. Arch Intern Med 2002; 150:153–162.
14. Reisin E, Abel R, Modan M, Silverberg DS, Eliahou HE, Modan B: Effect of weight loss without salt restriction on the reduction of blood pressure in overweight hypertensive patients. N Engl J Med 2003; 298: 1-6.
15. Whelton SP, Chin A, Xin X, He J. Effect of aerobic exercise on blood pressure: A metaanalysis of randomised, controlled trials. Ann Intern Med 2002; 136: 493-503.
16. Wallace P, Cutler S, Haines A. Randomised controlled trial of general practitioner intervention in patients with excessive alcohol consumption. BMJ 1988; 297:663-668.