DETERMINANTS OF ADHERENCE TO TREATMENT AND NUTRITIONAL COUNSELLING AMONG HYPERTENSIVE PATIENTS IN A SECONDARY HEALTH FACILITY IN SOUTH-WESTERN NIGERIA.

Abodunrin Olugbemiga L¹, Ojo Olufemi R², Onifade Bolatito T² and Ojofeitimi Ebenezer O¹.
1. Department of Community Medicine, College of Health Sciences, Ladoke Akintola University of Technology, Ogbomoso.
2. State Specialist Hospital, Asubiaro, Osogbo, Osun state.

Abstract

Introduction: It is estimated that almost one half of hypertensive patients drop out entirely from treatment within one year for various reasons. A major factor accounting for inadequate treatment of hypertension is poor adherence to both drugs treatment and nutritional diet as instructed by the physicians.

Methodology: This descriptive cross sectional study was carried out in Osogbo Local Government Area. A systematic random sampling procedure was used to select the 375 respondents who were interviewed using a semi-structured self developed questionnaire. Statistical Package for Social Sciences 22 was used for analysis

Result: Mean age of respondents was 56.34±14.34years. More than 80% reported good adherence to various dietary counselling such as reduction in salty, starchy and fatty food as well as alcohol. Others found it difficult to change their habits. Good adherence to medication and clinic appointments were found among 207 (55.9%) though 291(78.0%) claimed they were aware of the complications. Reasons for non-adherence were forgetfulness 101(93.5%) and financial constraints 97(89.8%). Age, sex, marital status, occupation, place of living, monthly income and religion were found to be significantly associated with adherence to nutritional counselling. The study also reveals that only the use of herbal medicine was significantly associated with adherence to medication.

Conclusion: Studies that may show importance of support group to improve adherence is necessary as in other chronic illnesses such as HIV and Tuberculosis. Health personnel should adhere to standards of providing adequate information through counselling as need be. Patients should take responsibility of their health and adhere to health instructions.
**Introduction:**
Hypertension, a leading cause of mortality and the third largest cause of disability is poorly controlled worldwide. It is estimated that almost one half of patients drop out entirely from treatment within one year and the failure to control hypertension takes an unacceptable hold on patients and their families (Akinkugbe, 1996).

Nigeria is experiencing urbanization and modernization which causes changes in diet and physical activities particularly in the cities. Like many other developing countries as a result of increased longevity and improvement in the standard of living as well as the influence of the western lifestyle such as cigarette smoking and alcohol consumption, hypertension has assumed a major public health dilemma. As a result, risk factors for hypertension such as sedentary lifestyle, obesity, consumption of fatty food and resultant dyslipidemia are highly prevalent sometimes in epidemic proportion (Bovet et al 2008, WHO 2003).

A major factor accounting for inadequate treatment of hypertension is poor adherence to both drugs treatment and nutritional diet as instructed by the physicians.

The nutritional transition, which is accompanied by equal rapid changes in levels of physical activity sedentary occupations, increased use of labour-saving devices at work and home is on the increase. This brings about changes in income profiles and body composition which in most cases leads to obesity (Barry and Pelletier, 2001; F.A.O., 2001). The role of nutrition in disease control is undeniable and diet is one of the most effective non pharmacological strategies and studies evidenced that healthy nutrition has beneficial effects on cardio metabolic parameters, but behaviour change and maintenance are not easy because the greatest responsibility in dietary adherence is on the patients. Poor adherence nutrition is especially common when a patient has poor knowledge, understanding and perception of his/her health condition or when a complex or/and expensive anti-hypertensive drug regime is prescribed sometimes also with unusual side effects.

It is usual to consider patients to be sufficiently compliant with their treatment when they take at least 80% of their prescribed anti-hypertensive drugs. In outpatients, adherence to anti-hypertensive medication ranges from 20% to 80% (Martin U and Nwankwo 1990, Crammer J. A. 1998). However, a review of World Health Organization, 2002, found that in developed countries adherence to long term therapies including hypertensive therapy in the population is around 50% and is as lower in low income countries including Nigeria.

Adopting unhealthy lifestyle and non-adherence with prescribed dietary habit is associated with uncontrolled hypertension as well as the risks of developing complications (Campell et al 2006). Adherence with hypertensive to medication and dietary life style has been shown to reduce the risk of stroke and coronary heart disease by estimate of a 42% and 31% respectively, (Law et al 2003). Studies also revealed that nutritional therapy improves life expectancy and quality of life.

It was revealed that two-thirds of patient who died from stroke had a history of hypertension. It is suggested that prevention of stroke in these populations should include control of high blood pressure where an adherence to quality hypertensive therapy is important (Chobanion et al 2003, Mazzaglia et al, 2009).

Little has been documented on the cause of poor adherence due to financial constraint, ignorance etc, therefore this study aimed to investigate the facts affecting adherence to medication and nutrition counseling among hypertensive patients in State Specialist Hospital, Osogbo.

The aim of this study is to assess the factors affecting adherence to medication and nutritional counseling among hypertensive patients in State Specialist Hospital, Osogbo.

**Methodology:**
This descriptive cross sectional study was carried out in Osogbo Local Government Area, which is one of the 30 Local Government Areas in Osun State, South West of Nigeria. The target population was the adult patients within the age >18 years attending the hypertension clinic of the state-owned General Hospital, Asubiaro, Osogbo, Osun state. It is a secondary health facility receiving referrals from primary and comprehensive health centres within and outside Osogbo city. It is located within the heart of the city within reach of community members. It is fairly well staffed with health professionals and with modern equipment. The hypertension clinic which is a specialist clinic
runs once a week and patients are usually counseled on various aspects of modifiable risk factors such as diet and physical activities apart from medication prescription.

Ethical clearance was obtained from the state ministry of health and permission to carry out the study was gotten from the hospital management as well as the consultant in charge of the Hypertension clinic.

A systematic random sampling procedure was used to select the respondents using every other patient that meet up with the inclusion criteria on the clinic days. All adults within the age >18years, who consented, were interviewed through a self-developed but validated, pre-tested, semi-structured, interviewer-administered questionnaires. Patients who are too sick were excluded from the study. A minimum sample size of 310 was arrived at using the Lang, J. Stoekeid 1963 formula for population greater than 1,000 and taken into consideration a non-response rate of 10%. The questionnaires were manually sorted out and analyzed using statistical package for social sciences (SPSS) version 22 on the computer. Appropriate cross tabulations and test statistics were applied and the p-value set at p=<0.05.

Results:-
A total of 375 questionnaires were administered and 370 were retrieved giving response rate to be 98.7 %. Mean age of respondents was 56.34±14.34years. More than half 255(68.9%) were male while 115(31.1%) were females. Majority 272 (73.5%) were married. Considerable number, 173(46.8%) of the respondents had no formal education while 60(16.2%) had up to tertiary education level. High proportion of the respondents, 169(45.7%) were traders, 82(22.2%) were civil servant while 18(4.9%) were retiree. Higher percentage of respondents were living in urban area while 66(17.8%) live in rural area. More than half 204(55.1%) source for their funds through daily payment while 121(32.7%) source for it through monthly salary. Majority 238(64.3%) of the respondents were Muslims and 123(33.2%) were Christians. (Table 1)

Table 1: Socio-demographics characteristics of Patients (N=370)

| Socio-demographic variables | Frequency (n) | Percentage (%) |
|-----------------------------|---------------|----------------|
| **Age (year)**              |               |                |
| < 20                        | 5             | 1.4            |
| 21-30                       | 16            | 4.3            |
| 31-40                       | 48            | 12.9           |
| 41-50                       | 49            | 13.2           |
| 51-60                       | 97            | 26.2           |
| >60                         | 155           | 41.9           |
| **Sex**                     |               |                |
| Male                        | 255           | 68.9           |
| Female                      | 115           | 31.1           |
| **Marital status**          |               |                |
| Single                      | 28            | 7.6            |
| Married                     | 272           | 73.5           |
| Divorced                    | 19            | 5.1            |
| widowed                     | 51            | 13.8           |
| **Educational status**      |               |                |
| No formal education         | 173           | 46.8           |
| Literate                    | 62            | 16.8           |
| Primary                     | 36            | 9.7            |
| Secondary                   | 39            | 10.5           |
| Tertiary                    | 60            | 16.2           |
| **Occupation**              |               |                |
| Unemployed                  | 32            | 8.6            |
| Civil servant               | 82            | 22.2           |
| Retiree                     | 18            | 4.9            |
| Traders                     | 169           | 45.7           |
| Self employed               | 69            | 18.6           |
| **Place of living**         |               |                |

897
Urban & Rural & 304 & 66 & 82.2 & 17.8 \\
Source of income & Monthly salary & 121 & 32.7 \\
 & Pension & 45 & 12.2 \\
 & Daily paid & 204 & 55.1 \\
Monthly income (naira) & 10000-30000 & 206 & 55.7 \\
 & 31000-60000 & 101 & 27.3 \\
 & 61000-80000 & 19 & 5.1 \\
 & 81000 and above & 44 & 11.9 \\
Religion & Christian & 123 & 33.2 \\
 & Muslim & 238 & 64.3 \\
 & Free thinker & 9 & 2.4 \\

Mean age = 56.34±14.34 years

In table 2, few 64(17.3%) smoke cigarette while majority 306(82.7%) do not. Out of sixty-four patients that smoke, 32(8.4%) smoke one-to-two sticks per day, 22(5.9%) smoke three-to-four sticks while 10(2.7%) smoke more than five sticks. Many 312(84.3%) of the studied patients don’t drink alcohol and only 58(15.7%) reported they do drink. Only 80 (21.6%) of the respondents use herbal medicine while many 290(78.4%) do not.

| Variables | Frequency(n) | Percentage(%) |
|-----------|--------------|---------------|
| Smoking habit | | |
| Smoke | 64 | 17.3 |
| Do not smoke | 306 | 82.7 |
| No of cigarette smoke(n=64) | | |
| 1-2 | 32 | 8.4 |
| 3-4 | 22 | 5.9 |
| >5 | 10 | 2.7 |
| Alcohol consumption habit | | |
| Drink | 58 | 15.7 |
| Not drinking | 312 | 84.3 |
| Quantity of 60cl bottle consumed (n=58) | | |
| 1 bottle per day | 15 | 25.9 |
| 2-5 bottle per day | 29 | 50.0 |
| More than 5 per day | 14 | 24.1 |
| User of herbal medicine | | |
| Users | 80 | 21.6 |
| Non-users | 290 | 78.4 |
| Reasons for users (n=80) | | |
| Because its contents are natural | 7 | 8.7 |
| Cultural good healthy wise | 4 | 5.0 |
| For quick recovery | 10 | 12.5 |
| Peoples advice | 12 | 15.0 |
| Its affordable | 47 | 58.8 |

Most of the respondents have the disease condition diagnosed within one year of data collection 231(65.6%). Majority 336(90.8%) of the patients were diagnosed at the hospital/health post while 20(5.4%) were first detected during religious medical outreaches (Christianity 16; 4.3% and Islam 4; 1.1%). More than half 238(64.3%) reported that they carried out some test while 132(35.7%) were not. Out of two-hundred and thirty eight that had the test including Chest X-ray, Blood and urine test etc even though some could not remember the exact name of the tests (Table 3). As many as 68(18.4%) indicated they had another disease apart from high blood pressure. Considerable proportion 37(10.0%) of those that had other disease claimed they had Diabetes. Higher proportion 304(82.2%) of
the studied patients reported that they were counseled on their ailment while 66(17.8%) were not counseled. Majority 257(84.5%) of those that were counseled said they were counseled on diet and usage of their drugs, 195(64.2%) were counseled on low salt intake while 71(23.4%) were counseled about healthy lung and life style (Table 3).

**Table 3:** Awareness and knowledge of patients on past history of their disease

| Variables                                           | Frequency(n) | Percentage(%) |
|-----------------------------------------------------|--------------|---------------|
| Duration of disease (n=352)                         |              |               |
| ≤1                                                   | 231          | 65.6          |
| 2-5                                                 | 69           | 19.7          |
| 6-10                                                | 41           | 11.6          |
| >10                                                 | 11           | 3.1           |
| Where it was diagnosed                              |              |               |
| Hospital                                            | 336          | 90.8          |
| Church/Mosque(health programme, outreach)           | 20           | 5.4           |
| Health post                                         | 14           | 3.8           |
| Do you carry out some test                          |              |               |
| Yes                                                 | 238          | 64.3          |
| No                                                  | 132          | 35.7          |
| *If yes, what are the test (n=238)                   |              |               |
| Urine test                                          | 135          | 56.7          |
| Blood test                                          | 94           | 39.5          |
| Chest X-ray                                         | 218          | 91.6          |
| ECG test                                            | 65           | 27.3          |
| Cholesterol                                         | 87           | 36.6          |
| Do you have any other disease rather than high blood pressure |              |               |
| Yes                                                 | 68           | 18.4          |
| No                                                  | 302          | 81.6          |
| *If yes, which one(n=68)                            |              |               |
| Febrile illness                                     | 3            | 0.8           |
| Kidney problem                                      | 5            | 1.4           |
| Stroke                                              | 6            | 1.6           |
| Diabetes mellitus                                   | 37           | 10.0          |
| Others                                              | 17           | 4.6           |
| Were you counseled                                  |              |               |
| Yes                                                 | 304          | 82.2          |
| No                                                  | 66           | 17.8          |
| *If yes about what(n=304)                           |              |               |
| About adequate diet and usage of drugs              | 257          | 84.5          |
| About drugs and adequate exercise                   | 145          | 47.7          |
| About nutrition intake                              | 123          | 40.5          |
| About healthy lung and life style                   | 71           | 23.4          |
| About Low salt intake                               | 195          | 64.2          |
| About regular check up                              | 135          | 44.4          |

- Multiple responses allowed

On patients’ adherence to nutritional counseling; Table 4 reveals that majority 295(79.7%) stated that they know hypertensive patients have a special diet while 75(20.3%) were not aware. The studied patients stated that they were counselled to be taking low salty food (207; 73.7%), low cholesterol (117; 41.6%), low refined sugar and starchy food (123; 43.8%); avoidance / reduction of alcohol (175; 62.1%) etc. However, 304(82.2%) reported that they were able to abide with their nutritional dictates out of which 121(32.7%) did so to avoid complication, 82(22.2%) felt it would contribute to controlling their blood pressure while 47(12.7%) said it was just because they cherish their health. Most of those that couldn’t abide indicated that it was due to difficulty to change habits they have been used to (57; 15.4%).
Table 4: Patient adherence to nutritional counseling.

| Variables                                                                 | Frequency (n) | Percentage (%) |
|---------------------------------------------------------------------------|---------------|----------------|
| Do you know that hypertensive patients has a special diet                  |               |                |
| Yes                                                                       | 295           | 79.7           |
| No                                                                        | 75            | 20.3           |
| *Counselling received about diet/nutrition (n=281)                         |               |                |
| Low salty food                                                            | 207           | 73.7           |
| Low cholesterol/fat containing meal                                       | 117           | 41.6           |
| Reduce starchy food and refined sugar                                     | 123           | 43.8           |
| Reduced /avoid alcohol                                                    | 175           | 62.3           |
| Liberal fruit                                                             | 81            | 28.8           |
| Good and adequate diet                                                    | 93            | 33.1           |
| Do you abide with nutrition                                               |               |                |
| Yes                                                                       | 304           | 82.2           |
| No                                                                        | 66            | 17.8           |
| If yes, why (n=304)                                                       |               |                |
| I cherish my health                                                       | 47            | 12.7           |
| for my safety                                                             | 33            | 8.9            |
| To avoid complication                                                     | 121           | 32.7           |
| To control my blood pressure                                              | 82            | 22.2           |
| To keep feet always and healthy                                           | 21            | 5.7            |
| If no, why (n=66)                                                         |               |                |
| Due to difficulty to change habit                                         | 57            | 15.4           |
| Due to Nigeria economy status / financial constraint                      | 3             | 0.8            |
| I eat anything I feel like eaten                                          | 6             | 1.6            |

Table 5 shows the patients’ adherence to medication and clinic appointments. It reveals that just a little more than half 207 (55.9%) were attending clinic appointments without skipping at all. Only 108 (29.2%) skipped the last 2 consecutive appointments with considerable proportion of them, 101 (93.5%) claiming that it was due to forgetfulness attitude while 97 (89.8%) said it was due to financial constraint. Moreover, majority 291 (78.6%) of the studied patients were aware of the complications of hypertension with 227 of them (78.0%) of the patients mentioning stroke as the major complication of hypertension. Most of the respondents 298 (80.5%) reported having their blood pressure measured regularly. About the same proportion 297 (80.3%) of those that do have regular blood pressure check-up were also the one that do take their medicine as prescribed by the health workers.

Table 5: Patients adherence to medication

| Variables                                                   | Frequency (n) | Percentage (%) |
|-------------------------------------------------------------|---------------|----------------|
| Do you usually skip clinic appointments                      |               |                |
| Yes                                                         | 163           | 44.1           |
| No                                                          | 207           | 55.9           |
| Skipped last 2 consecutive appointments                      | 108           | 29.2           |
| Reason for skipping (n=108)                                 |               |                |
| Forgetfulness                                               | 101           | 93.5           |
| Lack of finance                                             | 97            | 89.8           |
| Due to office work                                          | 79            | 73.1           |
| Travelling                                                  | 58            | 53.7           |
| Stress from work                                           | 51            | 47.2           |
| Always too busy                                            | 33            | 30.6           |
| Felt like symptoms were under control                       | 45            | 41.7           |
| Ever feel hassled about sticking to your treatment          |               |                |
| Yes                                                         | 206           | 55.7           |
| No                                                          | 164           | 44.3           |
| Are you aware about complication of hypertension            |               |                |
| Yes                                                         | 291           | 78.6           |
| No                                                          | 79            | 21.4           |
**If yes, what are they (n=291)**

| Condition                        | Yes (n=291) | No (n=156) |
|----------------------------------|-------------|------------|
| Unable to walk                   | 93          | 31.9       |
| Diabetes                         | 134         | 46.1       |
| Stroke                           | 227         | 78.0       |
| Heart disease                    | 98          | 33.7       |
| Sudden death                     | 67          | 23.0       |
| Cardio-vascular disease          | 44          | 15.1       |

**Having blood pressure measured regularly**

| Frequency | Regular (n=298) | Irregular (n=72) |
|-----------|----------------|------------------|
| Yes       | 298            | 80.5             |
| No        | 72             | 19.5             |

**Taking your medicine combination exactly as prescribed**

| Frequency | Yes (n=297) | No (n=73) |
|-----------|-------------|-----------|
| Yes       | 297         | 80.3      |
| No        | 73          | 19.7      |

*If yes, why (n=297)

| Reason                               | Yes (n=234) | No (n=153) |
|--------------------------------------|-------------|------------|
| To avoid complication                | 234         | 78.8       |
| Enhance quick recovery               | 153         | 51.5       |
| To regulate my blood pressure        | 113         | 38.0       |
| Healthy prescription                 | 71          | 23.9       |
| To avoid sudden death                | 67          | 22.6       |

*If no, why (n=73)

| Reason                                | Yes (n=19) | No (n=31) | Other (n=48) | Total (n=73) |
|---------------------------------------|------------|-----------|--------------|--------------|
| Due to side effect of the medication  | 19         | 26.0      |              |              |
| Feeling inconvenient                  | 31         | 42.5      |              |              |
| Constant Forgetfulness                | 48         | 65.8      |              |              |
| Lack of finance to purchase all the drugs | 52         | 71.2      |              |              |
| Drugs were too many                   | 13         | 17.8      |              |              |

*Multiple responses*

Table 6 demonstrates the relationship between socio-demographic characteristics and adherence to nutrition. It shows that there is significant relationship between age, sex, marital status, occupation, place of living, monthly income and religion in association with adherence to nutrition as there (P-value < 0.05) while the educational status and source of income were not statistically significant with (P-value >0.05).

**Table 6:** Association between socio-demographic characteristics and adherence to nutrition

| Socio-demographic variables | Do you abide with the nutrition |  $X^2$ | df | p-value |
|-----------------------------|---------------------------------|-------|----|---------|
|                             | Good (n)                        | Poor (n) |     |         |
| **Age (year)**              |                                 |        |    |         |
| ≤20                         | 4(80.0)                         | 1(20.0) | 22.944 | 5 | 0.006   |
| 21-30                       | 12(75.0)                        | 4(25.0) |     |         |
| 31-40                       | 39(81.3)                        | 9(18.8) |     |         |
| 41-50                       | 39(79.6)                        | 10(20.4)|     |         |
| 51-60                       | 67(69.1)                        | 30(30.9)|     |         |
| >60                         | 143(92.3)                       | 12(7.7 )|     |         |
| **Sex**                     |                                 |        |    |         |
| Male                        | 220(86.3)                       | 35(13.7)| 9.467 | 1 | 0.002   |
| Female                      | 84(73.0)                        | 31(27.0)|     |         |
| **Marital status**          |                                 |        |    |         |
| Single                      | 18(64.3)                        | 10(35.7)| 12.231 | 3 | 0.007   |
| Married                     | 234(86.0)                       | 38(14.0)|     |         |
| Divorced                    | 15(78.9)                        | 4(21.1 )|     |         |
| widowed                     | 37(72.5)                        | 14(27.5)|     |         |
| **Educational status**      |                                 |        |    |         |
| No formal education         | 138(79.8)                       | 35(20.2)| 2.809 | 4 | 0.590   |
| Literate                    | 51(82.3)                        | 11(17.7)|     |         |
| Primary                     | 32(88.9)                        | 4(11.1 )|     |         |
| Secondary                   | 31(79.5)                        | 8(20.5 )|     |         |
Table 7 shows the relationship between socio-demographic characteristics and adherence to medications. It reveals that the age, marital status, educational status, occupation and place of living were statistically significant (p <0.05) while the variables sex, monthly income and religion were not statistically significant (p >0.05).

**Table 7:- Association between socio-demographic characteristics and adherence to medications**

| Socio-demographic variables | Taking medicine as prescribed | $X^2$ | df | p-value |
|-----------------------------|-------------------------------|------|----|---------|
| Age (year)                   |                               |      |    |         |
| 21-30                        | 11(12.8)                      | 10(76.3) | 30.741 | 5 | *<0.001 |
| 31-40                        | 43(89.6)                      | 5(10.4)  |     |         |
| 41-50                        | 42(85.7)                      | 7(14.3)   |     |         |
| 51-60                        | 66(68.0)                      | 31(32.0)  |     |         |
| >60                          | 135(87.1)                     | 20(12.9)  |     |         |
| Sex                          |                               |      |    |         |
| Male                         | 210(82.4)                     | 45(17.6)  | 2.247 | 1 | 0.088   |
| Female                       | 87(75.7)                      | 28(24.3)  |     |         |
| Marital status               |                               |      |    |         |
| Single                       | 17(60.7)                      | 11(39.3)  | 9.594 | 3 | *0.022  |
| Married                      | 227(83.5)                     | 45(16.5)  |     |         |
| Divorced                     | 15(78.9)                      | 4(21.1)   |     |         |
| widowed                      | 38(74.5)                      | 13(25.5)  |     |         |
| Educational status           |                               |      |    |         |
| No formal education          | 124(71.7)                     | 49(28.3)  | 18.165 | 4 | *0.001  |
| Literate                     | 52(83.9)                      | 10(16.1)  |     |         |
| Primary                      | 35(97.2)                      | 1(2.8)    |     |         |
| Secondary                    | 35(89.7)                      | 4(10.3)   |     |         |
| Tertiary                     | 51(85.0)                      | 9(15.0)   |     |         |
| Occupation                   |                               |      |    |         |
| Unemployed                   | 20(62.5)                      | 12(37.5)  | 15.570 | 4 | *0.004  |
| Civil servant                | 75(91.5)                      | 7(8.5)    |     |         |
Table 8 reveals the relationship between social habit and adherence to medication as well as nutritional advice. It reveals that only the use of herbal medicine is statistically significant (p<0.038) while smoking and taking of alcohol were not statistically significant (p >0.05).

Table 8: Association between social habit and adherence to medication

| Social habit variables | Taking medication as prescribed | X^2 | df | p-value |
|------------------------|---------------------------------|-----|----|---------|
| Do you smoke           |                                 |     |    |         |
| Yes                    | 49(76.6)                        | 0.672 | 1  | 0.255   |
| No                     | 248(81.0)                       |     |    |         |
| Do you consume alcohol |                                 |     |    |         |
| Yes                    | 49(84.5)                        | 0.771 | 1  | 0.247   |
| No                     | 248(79.5)                       |     |    |         |
| Do you use herbal medicine |                             |     |    |         |
| Yes                    | 58(72.5)                        | 3.891 | 1  | *0.038  |
| No                     | 239(82.4)                       |     |    |         |

| Social habit variables | Abiding with the nutritional advice |     |    |         |
|------------------------|------------------------------------|-----|----|---------|
| Do you smoke           |                                    |     |    |         |
| Yes                    | 49(76.6)                          | 1.656 | 1  | 0.135   |
| No                     | 255(83.3)                         |     |    |         |
| Do you consume alcohol |                                    |     |    |         |
| Yes                    | 46(79.3)                          | 0.382 | 1  | 0.325   |
| No                     | 258(82.7)                         |     |    |         |
| Do you use herbal medicine |                              |     |    |         |
| Yes                    | 60(75.0)                          | 3.572 | 1  | *0.045  |
| No                     | 244(84.1)                         |     |    |         |

Discussion:--
Hypertension is an abnormal state of circulatory function which in the long term, can lead to organ damage and several morbidity. It is accepted that individual pressure levels are influenced by genetics and non-genetics factors. The important of non genetic factors are: Diet e.g. level of sodium, Alcohol consumption, Lack of physical exercise, Physiological, Social economy and Behavioural factors.

Mean age in this study was 56.34±14.34 years, it was found that 41.9% of patients were aged >60. Although this result is consistent with Ojofeitimi et al (41 – 45.1%) Mallen et al (39%) and Mende-chacou et al (Male 68.9, Female 31.1%). It is at variance with that of Bakoglu and Yetkin (29.1%). In this study, 68.9% were male, while 31.1% were female. Although Hacialioglu et al (50.3%), Unsar and Yungen (67%) Lahdeupera et al (59.4%), Osamor and Owumi (65.2%) reported hither rates of hypertension in females. After menopause, women tend to
have higher levels of BP than men of similar age. After the age of 50, hypertension is more prevalent in women, though the reason for that is not clear (Black J. M., Matassarin – Jacoms E., Luckman and Sorsen’s).

It was found that 65.6% of patients had been suffering from hypertension for 1 year and 2 – 5 years, similarly, figures for patients suffering from hypertension for 1 year and 2 – 5 years were reported by Bakoglu and Yetkin (51.3%) Leung et al. This frequent result of 12 year and 2 – 5 years may be associated with the fact that hypertension is an asymptomatic disease. In the relatively poor province of Erzincan, Turkey, the limited utilization of health services and lack of health screening might account for hypertension remaining undiagnosed for a long time. By providing hypertension awareness programme, Nurses can alert people about relevant risk factors for hypertension and direct than to appropriate prevention and management options.

The level of patient adherence to nutritional counseling, it reveals that majority 295 (79.7%) claimed that they know hypertensive patients have a special diet while 75 (20.3%) were not aware. Considerable proportion 131 (35.4%) mentioned low salt intake, 74 (20.2%) mentioned low cholesterol food, 43 (11.6%) mentioned fruit while 31 (8.4%) mentioned low sugar intake as the hypertensive patients diet. Many 107 (28.9%) of the studied patients stated that they were told to be taking low salty food and cholesterol, 67 (81.1%) were told to be taking low salt.

Studies conducted over the years have demonstrated that high salt intake is directly associated with high blood pressure (Karppamen & Mervala 2006).

A research conducted by Balogun et al (2006) revealed that popular Nigerian, Ghanaian and Caribbean meals had higher levels of salt (8.6 – 12g per portion). The study further revealed that high levels of salt were good both in meals from restaurants and homemade meals. This is due to the fact that most seasonings, as cubes used for preparing meals at home had about 5.4g of salt per cube.

The prevalence of clinic appointment non-adherence (taken as missing 2 consecutive clinic appointment) in this study was 29.2% even though as many as 55.9% has missed appointment at one time or another. Reasons given for non-adherence are similar to previous studies in Nigeria and other countries as well (Alhamad Z et al 2013, Berg MB et al 2005 and Akhigbe SI et al 2014). Medication adherence prevalence in our study was found to be 80.3% similar to findings of Akintunde (Akihtunde A et al 2015) but much higher than findings by Boima where adherence was found only in 34% of the hypertensive patients (Boima V et al 2015). This could have been due to different method used in measuring Medication Non Adherence in which Boima and Akintunde used an 8 parameter scale (Morisky) while our study was on self-reported sticking to prescription. A study reported that medication adherence was higher in the specialized clinic than the General outpatient clinic and this was attributed to more time of health talk and counselling.(Akintunde A et al 2015)

The relationship between age and adherence to nutrition has been documented by previous studies and sex, occupation, marital status, income and religion has been recognized as a very important determinant of adherence to nutrition (Gaur et al, 2008; Nwachukwu & Obasi, 2008; Shah, Pradhan, Reddy & Joseph, 2006). This may explain the significant association between these variables and adherence to nutritional counseling with the age group greater than 60years having abide with their nutrition and those that are married abide with the proper nutrition than singles in this study. There was also a significant relationship between respondents’ income and adherence to proper nutrition with more earning 10000 to 30000 naira abide to the proper nutrition as compared to those earning more income.

Similar determinants of medication adherence as in most other studies were also found except that our study did not show that income is a statistically significant factor found in previous studies. (Akintunde A et al 2015 and Boima V et al 2015).

**Conclusion and Recommendation:-**

Based on the findings of this study there is need for launching a comprehensive approach involving health care providers, patients and the general public especially with the aim of educating patients on the need to abide with proper nutrition in the manner prescribed by the health practitioners. Health personnel should adhere to standards of providing adequate information through counselling as need be. However, majority of the respondents were aware of their disease state. Majority of the respondents were aware of special diet for hypertensive patients and the major factors affecting nutritional counseling are to avoid complication to control blood pressure and to keep fit and
healthy always. Those who did not adhere to nutritional counseling complained of financial constraint, national economic status. It is therefore necessary for health practitioners to intensify their health education and counselling of their hypertensive patients. The patient should know the importance of adherence with proper nutrition whether they have symptoms or not. They should take responsibility of their health and adhere to health instructions. Further studies on adherence by health insured patients should be carried out to negate the financial catastrophe that could have affected their adherence. Studies that may show importance of support group to improve adherence is necessary as in other chronic illnesses such as HIV and Tuberculosis.

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