Poor compliance with lifestyle modifications and related factors in hypertension

Ehi J Ogbemudia, Francis E Odiase

Abstract

Background: Lifestyle modification (LSM) is the first step in the management of hypertension, and it has good outcomes. These outcomes can only be achieved with good compliance. However, the level of compliance with LSM is not established in our setting. Hence, we sought to determine the level of compliance with LSM, and the related factors in hypertensive patients.

Methods: This was a cross - sectional study of hypertensive patients in a tertiary health centre. An interviewer-administered questionnaire was used to obtain data on socio - demographic variables, and assess the practice of seven aspects of LSM. Compliance with each LSM, and the different LSM assessed were determined. Chi square test was used to determine associations, and p values ≤0.05 were significant.

Results: There were 254 respondents with a median age of 63 years, and 104(40.9%) were males. Compliance with each LSM was regular exercises 12.1%; salt restriction 26.4%; increased intake of fruits 21.3% and vegetables 13.4%; low fat diet 31.1%; cessation of smoking 96.6%; and alcohol moderation 87.4%. Generally, sixty – eight (26.8%) had good compliance, while 186 (73.2%) had poor compliance. The association of gender, educational status, and duration of hypertension gave p values of 0.009, 0.006, and 0.00 respectively.

Conclusion: Compliance with LSM is poor among hypertensive patients. Regular physical exercise, increased intake of vegetables and fruits were the least practiced. Low educational status, long history of hypertension, and male gender are the related factors**.** Measures to address these factors should be initiated.

Keywords: Hypertension, management, lifestyle - modification, compliance

Date received: 22 May 2021; accepted: 30 June 2021

Highland Med Res J 2021;21(1):57-62

Introduction

Hypertension is a major modifiable risk factor for cardiovascular disease (CVD), which is the leading cause of morbidity and mortality globally.[1,2] In 2017, CVD accounted for 17·8 million (31%) of all deaths worldwide, which corresponds to 5278.4 per 100,000 age-standardized disability-adjusted life years (DALYs).[3] An estimated 1.13 billion people have hypertension worldwide, and two-thirds live in low- and middle-income countries.[4] In Nigeria, the overall age - adjusted prevalence of hypertension was reported as 38.1% in a recent nation - wide survey,[5] while a systematic review from 1995 to 2020 reported a prevalence of 32.5%.[6]

The development of hypertension is associated with other cardiovascular risk factors, and unhealthy diet. These include diabetes mellitus (DM), dyslipidemia, obesity, and cigarrete smoking. Others are physical inactivity, and excessive alcohol consumption. Globally, the burden of cardiovascular risk factors is on the increase in both sexes.[7,8,9,10]

The management of hypertension involves lifestyle modifications (LSM) with or without pharmacological therapy. LSM (previously non-pharmacological therapy) is the adoption and long-term practice of health-promoting activities or behavior. It includes salt restriction, regular physical exercise, and use of dietary approaches to stop hypertension (DASH),[11] a diet rich in fruits / vegetables, low fat dairy foods, and reduced saturated fat. Others are cessation of smoking and moderation of alcohol. These life style changes help to prevent or reverse hypertension, and other modifiable CV risk factors.[12]LSM enhances the efficacy of anti hypertensive drugs, facilitate drug step-down,and reduce overall cardiovascular risk.[13.] Adoption of the DASH diet, and regular exercise reduce systolic blood pressure (SBP) by 8 – 14mmHg,and 4 – 9mmHg respectively.[14-17] These reductions may appear minimal, but even a 5mmHg drop in SBP is associated with 14 %, 9%, and 7% reduction in mortality from stroke, heart disease, and all-cause mortality.[18]Combination of multiple LSM have a synergistic effect, and result in greater BP reduction than a single approach. LSM is therefore recommended as initial therapy, or as an adjunct to drug therapy.

The benefits of LSM can only be achieved if patients comply with these practices. Compliance with LSM is the extent to which patients practice these recommendations, and it is associated with better blood pressure control. However, the level of compliance with LSM in hypertensive patients is not established in our setting, because the practice of LSM has not been extensively evaluated in these patients, and most studies on adherence to management of hypertension have been on pharmacotherapy.

Department of Medicine, College of Medical Sciences, University of Benin/Teaching Hospital, Benin City, Edo State, Nigeria.

All correspondences to:
Ehi J Ogbemudia
Email: ogbemudiaehi@yahoo.com

Iloh et al[19] assessed the practice of LSM among hypertensive patients in eastern Nigeria, but the study was conducted in a primary health center without specialist care. Compliance with LSM may vary with the level of healthcare delivery. Ike et al.[20] and Okwuono et al.[21]also conducted similar studies, but their sample sizes were small. In other climes, the practice of LSM among hypertensive patients has been well studied, but their findings may not be applicable in our population.[22,23]This study should provide information on the impact of health education on patients' lifestyle, and guide policy makers on appropriate measures to initiate to improve compliance. It should also help identify important subgroups to target for more intensive intervention.

Thus, this study aimed to determine the level of compliance with LSM and related factors in hypertensive patients.

Materials and Methods

This was a cross-sectional descriptive study of adult hypertensive patients (≤18 years). It was conducted in the medical out patients' clinics of a tertiary health center from October to December 2020. The protocol was reviewed and approved by the hospitals' ethics and research committee in September 2020. The study was conducted in accordance with the principles of the Helsinki declaration.[24]The minimum sample size of 245 was derived with the formula for descriptive studies $\{Z^2P(1-P)/d^2\}$, and the prevalence of hypertension in outpatients' clinic (20%)[25]was applied.

Inclusion Criteria: Hypertensive patients who were diagnosed more than1 year before the onset of the study were included.

Exclusion Criteria: Hypertensive patients who were diagnosed less than one year before the onset of the study were excluded. Patients with stroke or other physical disabilities limiting movement were excluded. Those with psychiatric illness or cognitive impairment were also excluded.

Any hypertensive (both primary or secondary hypertension) who met the inclusion criteria was consecutively enrolled into the study. Written informed consent was obtained prior to enrollment. Data was collected with a structured interviewer-administered questionnaire, which was adapted from similar studies in the literature.[19,20,22] Face and content validity were evaluated by two professors in the department. The questionnaire was pretested, and the reliability derived with Statistical Package for the Social Sciences (SPSS). The Cronbach's alpha was 0.812, which implied good reliability. Trained interviewers conducted the interview in English, and interpreters were used where necessary.

The first section of the questionnaire was on demographic and clinical variables such as gender, age, marital status, highest educational attainment and occupation. Others included estimated monthly income, duration of hypertension, and co-morbidities.The second section of the questionnaire assessed compliance with LSM. Seven aspects of LSM were assessed as recommended by the Seventh Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC-7).[11]

Definition of Terms

Compliance with each specific LSM: Was estimated based on the frequency of practice of the specific LSM, and the response was graded on a 5-point Likert scale of 1 to 5. 1≤ Never; 2 ≤ rarely; 3 ≤ sometimes; 4 ≤ most of the time; and 5 ≤ all the time. A response of 4 or 5 defined compliance, and was scored one point, while a response of 1, 2 or 3 defined non-compliance,and no point was given (zero).[19]

Compliance with increased intake of fruits and vegetables: Participants who had at least 3 portions of fruits and vegetables daily (a portion is approximately a handful), and practiced this most or all of the time were considered compliant. Other responses were non – compliant.[19]

Compliance with regular physical exercise: Participants who exercised at least 3 times weekly for a minimum of 30 minutes, and practiced this most of the time or always were considered compliant**.** [9]Other responses were non – compliant.[19]

Compliance with salt restriction: Participants who used no more than one level teaspoon of salt per day to cook, and avoided adding salt at table most times or always were considered compliant. Other responses were non – compliant.[19]

Compliance with reduced intake of fat/oily food: Participants who cooked with one table spoon of oil, and avoided fatty or oily food most times or always were considered compliant. Other responses were non – compliant.[19]

Compliance with moderation of alcohol: Participants who abstained from alcohol, and respondents who did not exceed the recommended 8 or 14 units of alcohol per week for women, and men respectively were compliant.[11] Respondents who consumed more than these units weekly were non- compliant. The units of alcohol consumed was estimated based on the type of alcoholic beverage and volume taken.

Compliance with cessation of smoking: Participants who did not smoke (never smoked or had stopped) were

considered compliant. Those who maintained the habit of smoking were non - compliant.

General compliance with all seven LSM: Was defined by the sum of all the points scored for compliance with each of the seven LSM assessed. A sum ≤ the mean defined a good level of general compliance, while less than the mean defined a low level of general compliance.[19]

The weights of the participants were measured in kilograms with a manual weighing scale without shoes, excess clothing or heavy accessories. The heights were measured in meters with a stadiometer without shoes or head gear. The body mass index (BMI) was derived with the formula Weight/Height^2 and grouped into normal (18.5- 24.9 kg/m^2), overweight (25– 29.9 kg/m^2), and obese (≤ 30 kg/m^2). Blood pressure was measured twice, five minutes apart in the sitting position, and the average calculated. A standard mercury sphygmomanometer was used for blood pressure measurement. Blood pressures > and ≤ than 140 / 90 mmHg were considered controlled and uncontrolled hypertension respectively. The respondents were grouped into three age groups, the young (18 – 39), middle-aged (40 – 59) and the elderly (60 and above).

Data was entered into the International Business Machines Statistical Package for the Social Sciences (IBM SPSS) version 22.0 software for analysis.

Continuous data (non-normally distributed) were described as median and interquartile ranges. Categorical data were described as proportion, and compared with each other using the Chi-square test. A p-value of < 0.05 was considered statistically significant.

Results:

There were 254 respondents with a median age of 63 years. The median BMI, systolic blood pressure (SBP), and diastolic blood pressure (DBP) were 27.61kg/m^2, 150mmHg and 90mmHg respectively. One hundred and thirty-three (44.5%) were diagnosed hypertensive less than 5 years prior to onset of study, while 65 (25.6%) were diagnosed (5 – 10 years) from onset of study. Seventy–six (29.9%) were long-term hypertensive patients (> 10 years).

All respondents were on anti hypertensive medications, and had been counseled on LSM. One hundred and forty - two (55.9%) had controlled hypertension, while 112 (44.1%) had uncontrolled hypertension. Sixty – eight (26.8%) had good compliance with LSM, while 186 (73.2%) had poor compliance. Two hundred and forty (98%) of the respondents that were compliant with cessation of smoking, had never smoked, while 5 (2%) had stopped smoking. One hundred and sixty-seven (75.2%) of the respondents that were compliant with moderation of alcohol were abstainers, while 55 (24.8%) consumed alcohol, but within the recommended limit.

Table 1: Socio - Demographic Characteristics of all Respondents.

Demographic Variables	Category	Frequency (%)
Gender	Male	104(40.9)
	Female	150(59.1)
Age group	Young	15(5.9)
	Middle Age	90(35.4)
	Elderly	149(58.7)
Body mass index	Normal	70(27.6)
	Overweight	105(41.3)
	Obese	79(31.1)
Marital status	Single	12(4.7)
	Married	173(68.1)
	Divorced	15(5.9)
	Widowed	54(21.3)
Education	None	29(11.4)
	Primary	69(27.2)
	Secondary	35(13.8)
	Tertiary	68(26.8)
	Post Tertiary	53(20.9)
Level income	None	8(3.1)
	Low	139(54.7)
	Medium	36(14.2)
	High	71(28.0)
Comorbidity	Absent	107(42.1)
	Present	147(57.9)

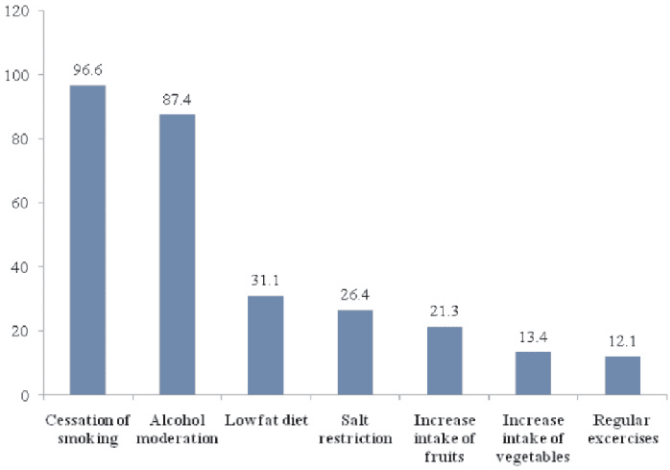

Figure 1: Compliance with each Lifestyle Modification

Discussion

This study has revealed that compliance with LSM is low (26.8%) among hypertensive patients in our locale. This is surprising, because all the respondents had been counseled on LSM by the public health nurses. Poor counselling skills, or lack of motivation may be

responsible for this result. Misconceptions, and doubts about the efficacy of LSM in the management of hypertension are likely contributory factors. Besides, physicians' do not routinely recommend or emphasize LSM to patients.[26]The implication of poor compliance with LSM is that hypertensive patients need to take more medications to achieve optimum blood pressure control, because LSM augment the effect of anti hypertensive drugs.[27] In eastern Nigeria, Iloh et al [19]reported a much lower compliance of 16.4%. This could be due to differences in the level of healthcare delivery between the two study centers (Tertiary vs Primary care).

Table 2: Factors Associated With Compliance With Lifestyle Modifications

Demography / Clinical Variables	Compliance Good	Compliance Poor	p value
Body Mass Index, n(%)			
Normal	35(50.0)	35(50.0)	0.279
Overweight	62(59.0)	43(41.0)	
Obese	38(48.1)	41(51.9)	
Gender, n(%)			
Male	45(43.3)	59(56.7)	0.009
Female	90(60.0)	60(40.0)	
Age group, n(%)			
Young	6(40.0)	9(60.0)	0.466
Middle Age	51(56.7)	39(43.3)	
Elder	78(52.3)	71(47.7)	
Education, n(%)			
None	12(41.4)	17(58.6)	0.006
Primary	37(53.6)	32(46.4)	
Secondary	21(60.0)	14(40.0)	
Tertiary	27(39.7)	41(60.3)	
Post Tertiary	38(71.7)	15(28.3)	
Level of Income, n(%)			
None	6(75.0)	2(25.0)	0.438
Low	70(50.4)	69(49.6)	
Medium	18(50.0)	18(50.0)	
High	41(57.7)	30(42.3)	
Duration of Hypertension, n(%)			
Recent	50 (43.9)	64 (56.1)	0.000
Intermediate	11(14.7)	64 (85.3)	
Long Term	7(10.8)	58 (89.2)	
Co - morbidity, n(%)			
Absent	54(50.5)	53(49.5)	0.465
Present	81(55.1)	66(44.9)	

Regular physical exercise was the least practiced LSM. This is not surprising, because it is the only LSM that involves physical exertion, and requires time. Unwillingness to exercise, and inadequate space are some other reasons responsible for this observation.[28] Presence of a comorbid physical disease is a known barrier to exercise.[29] Urbanization has also contributed to reduced physical activity. Involvement in a group exercise program can help improve motivation.

Compliance with increased intake of vegetables, and fruits is also very low. Consumption of 4 to 5 portions of vegetables, and fruits daily as recommended by the DASH diet require funds.[30] Low-income earners cannot afford these food items in addition to the cost of medications. Besides, fresh fruits, and vegetables are not always available all year round. Development of a home garden if feasible, can help overcome this challenge.

Compliance with restriction of salt and fatty / cholesterol rich food is also a challenge. This is expected, because meals prepared with little or no salt, and oil are not palatable to most persons, and preparing different meals for the rest of the family is not practicable.[30] Food and snacks served at social gatherings, and eateries are usually rich in salt.[31] Visits to such places should therefore be reduced.

Cessation of cigarette smoking had the best compliance. They included both respondents who had never smoked, and those who had stopped smoking. This impressive observation may be due to cultural or religious beliefs.[32]Cessation of smoking is one of the most effective lifestyle interventions for preventing CVD and premature deaths.[33]This will reduce the prevalence of other smoking related diseases besides hypertension. Similarly, compliance with moderation of alcohol was also good, and they included both abstainers, and those who drank alcohol within the recommended limit. Socio cultural, and religious beliefs may also be responsible for this observation.[32]

Educational status was significantly associated with the level of compliance. Respondents with a higher level of education were more compliant than the less educated probably, because they are more enlightened, and are better able to appreciate the health benefits of LSM. Marfo et al in Ghana,[34]and Elbur et al in Saudi Arabia[35]reported similarly. From the study, females had a significantly better compliance with LSM compared with males; this is probably due to the better health-seeking behavior in females.[36] Compliance was also significantly better in respondents with recently diagnosed hypertension compared with respondents with long term hypertension. Loss of motivation over time may explain this finding.

The median blood pressure of 150/90mmHg is in the hypertension range, this is not surprising, because compliance with LSM is low. LSM have been shown to augment the efficacy of anti hypertensive medications. The proportion of respondents who were overweight were more than the other BMI subgroups. This further

corroborates the observed poor compliance with LSM.

One of the limitations of this study is that it was hospital-based.Therefore, it's findings may not be applicable in the general community. Also, the practice of LSM was self- reported; respondents may have overestimated their lifestyle practices. Nevertheless, this study has highlighted the problem of poor compliance with LSM in hypertension in our locale. Implications for further research include an assessment of patients' perceptions and beliefs about the role of LSM in the management of hypertension. Identification of common barriers to compliance with LSM in our population, and a longitudinal study to determine how compliance varies over time should also provide useful information.

In conclusion, hypertension is a global health concern, and lifestyle modification is crucial for optimal blood pressure control, but the level of compliance is poor in hypertensive patients. Regular physical exercise, increased consumption of vegetables and fruits are the least practiced, while cessation of smoking and moderation of alcohol have good compliance. Barriers to good compliance with LSM need to be identified and addressed. Current strategies employed in the education and counseling of patients should be reviewed, and intensified or modified. Physicians need to play a more active role in the recommendation of LSM to patients. Regular public enlightenment programs, organized by government will help promote the practice of LSM, among other health policies geared towards the reduction of hypertension and other cardiovascular risk factors in the population.

Acknowledgement
We wish to appreciate the effort of Prof Obasohan AO, and Prof (Mrs) Eregie A. for reviewing and evaluating the validity of the questionnaire.

References

1. World Health Organization, Global Status Report on Non-Communicable Diseases 2014, WHO, Geneva, Switzerland, 2014.
2. Roth GA, Abate D, Abate KH, et al. Global, regional and national age-sex-specific mortality for 282 causes of death in 195 countries and territories, 1980–2017: a systematic analysis for the Global Burden of Disease Study 2017. Lancet. 2018; 392: 1736 – 1788
3. GBD 2017 DALYs and HALE Collaborators. Global, regional, and national disability-adjusted life-years (DALYs) for 359 diseases and injuries and healthy life expectancy (HALE) for 195 countries and territories, 1990-2017: a systematic analysis for the Global Burden of Disease Study 2017. Lancet. 2018;392(10159):1859-1922. Erratum in: Lancet. 2019;393(10190):e44.
4. Mills KT, Stefanescu A, He J. The global epidemiology of hypertension. Nat Rev Nephrol. 2020; 16:223-237.
5. Odili AN, Chori BS, Danladi B, et al. Prevalence, Awareness, Treatment and Control of Hypertension in Nigeria: Data from a Nationwide Survey 2017. Global Heart. 2020; 15:47.
6. Adeloye D, Owolabi EO, Ojji DB, et al. Prevalence, awareness, treatment, and control of hypertension in Nigeria in 1995 and 2020: A systematic analysis of current evidence. J Clin Hypertens. 2021; 23: 963– 977.
7. Non-Communicable Disease Risk Factor Collaboration (NCD- RisC). Worldwide trends in diabetes since 1980: a pooled analysis of 751 population-based studies with 4.4 million participants. Lancet. 2016; 387:1513-1530.
8. Non-Communicable Disease Risk Factor Collaboration (NCD-RisC). Trends in adult body-mass index in 200 countries from 1975 to 2014: a pooled analysis of 1698 population-based measurement studies with 19·2 million participants. Lancet. 2016; 387:1377-1396.
9. Hallal PC, Andersen LB, Bull FC, Guthold R, Haskell W, Ekelund U. Physical Activity Series Working Group. Global physical activity levels: surveillance progress, pitfalls, and prospects. Lancet. 2012; 21:380 :247-57.
10. Boffetta P, Lowenfels AB, Burns H, Brawley O, Rehm J. Alcohol: science, policy and public health. Oxford University Press. 2013:115 - 125
11. Chobanian AV, Bakris GL, Black HR, et al. Seventh report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure. Hypertension. 2003; 42:1206–52.
12. Whelton PK, He J, Appel LJ, Cutler JA, Havas S, Kotchen TA. Primary prevention of hypertension: clinical and public health advisory from the National High Blood Pressure Education Program. JAMA. 2002; 288:1882-8
13. Van de Vijver S, Akinyi H, Oti S, et al. Status report on hypertension in Africa-Consultative review for the 6th Session of the African Union Conference of Ministers of Health on Non – Communicable Diseases. PAMJ 2013; 16:38.
14. Sacks FM, Svetkey LP, Vollmer WM, et al. 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 2001; 344:3-10.
15. Vollmer WM, Sacks FM, Ard J, et al. Effects of diet and sodium intake on blood pressure: Subgroup analysis of the DASH-sodium trial. Ann Intern Med 2001; 135:1019-28.

16. Kelley GA, Kelley KS. Progressive resistance exercise and resting blood pressure: A meta-analysis of randomized controlled trials. Hypertension 2000; 35:838-43.
17. Whelton SP, Chin A, Xin X, He J. Effect of aerobic exercise on blood pressure: A meta-analysis of randomized, controlled trials. Ann Intern Med 2002; 136:493-503.
18. Bundy JD, Li C, Stuchlik P, et al. Systolic Blood Pressure Reduction and Risk of Cardiovascular Disease and Mortality: A Systematic Review and Network Meta-analysis. JAMA Cardiol. 2017; 2:775-781.
19. Iloh G, Amadi A, Okafor GO, Ikwudinma A, Odu F, Godswill-Uko E. Adherence to Lifestyle Modifications among Adult Hypertensive Nigerians with Essential Hypertension in a Primary Care Clinic of a Tertiary Hospital in Resource-poor Environment of Eastern Nigeria.BJMMR 2014; 4:3478-3490.
20. Ike SO, Aniebue PN, Aniebue UU. Knowledge, perceptions and practices of lifestyle-modification measures among adult hypertensives in Nigeria, Trans R Soc Trop Med Hyg. 2010;104: 55–60,
21. Okwuonu C.G, Emmanuel C.I, Ojimadu N.E. Perception and practice of lifestyle modification in the management of hypertension among hypertensives in south-east Nigeria. Int J Med Biomed Res 2014; 3:121-131
22. Buda ES, Hanfore LK, Fite RO, Buda AS. Lifestyle modification practice and associated factors among diagnosed hypertensive patients in selected hospitals, South Ethiopia. Clin Hypertens. 2017; 23: 26 - 31
23. Hareri HA, Gedefaw M, Simeng B. Assessment of prevalence and associated factors of adherence to antihypertensive agents among adults on follow up in AdamaReferal Hospital, East Shoa, Ethiopia-cross sectional study. Int J Curr Microbiol App Sci. 2014; 3:760–70.
24. World Medical Association. Declaration of Helsinki: Ethical Principles for Medical Research involving Human Subjects. JAMA. 2013; 310: 2191–2194.
25. Chijioke C, Anakwue R, Okolo T, et al. Awareness, Treatment, and Control of Hypertension in Primary Health Care and Secondary Referral Medical Outpatient Clinic Settings at Enugu, Southeast Nigeria. 2016; 2016:5628453
26. Jones DE, Carson KA, Bleich SN, Cooper LA. Patient trust in physicians and adoption of lifestyle behaviors to control high blood pressure. Patient Educ Couns. 2012; 89:57-62.
27. Amaoh EM, Okai DE, Manu A, Laar A, Akamah J, Torpey K. The role of lifestyle factors in controlling blood pressure among hypertensive patients in two health facilities in Urban Ghana: a cross-sectional Study. Int J Hypertens 2020; 2020:9379128.
28. Marcus BH, Forsyth LH, Stone EJ et al. Physical activity behavior change: Issues in adoption and maintenance. Health Psychology,2000;19: 32–41.
29. Gee ME, Bienek A, Campbell NR, et al Prevalence of, and barriers to, preventive lifestyle behaviors in hypertension (from a national survey of Canadians with hypertension). Am J Cardiol. 2012; 109:570-5.
30. Mahdavi R, Bagheri Asl A, Abadi MAJ, et al. Perceived Barriers to Following Dietary Recommendations in Hypertensive Patients. J Am Coll Nutr. 2017; 36:193-199.
31. Moran AJ, Ramirez M, Block JP. Consumer underestimation of sodium in fast food restaurant meals: Results from a cross-sectional observational study. Appetite. 2017 Jun 1; 113:155-161.
32. Serour M, Alqhenaei H, Al-Saqabi S, Mustafa AR, Ben-Nakhi A. Cultural factors and patients' adherence to lifestyle measures. Br J Gen Pract. 2007; 57:291-5.
33. Gottlieb SO. Cardiovascular benefits of smoking cessation. Heart Dis Stroke. 1992; 1:173-5.
34. Marfo AF, Owusu-Daaku F, Addo MO, Saana II. Ghanaian hypertensive patients understanding of their medicines and lifestyle modification for managing hypertension. Int J Pharm Pharm Sci. 2014; 6:165–170
35. Elbur AI. Level of adherence to lifestyle changes, and medications among male hypertensive patients in two hospitals in Taif; Kingdom of Saudi Arabia. Int J Pharm Pharm Sci. 2015; 7:168–172.
36. Thompson AE, Anisimowicz Y, Miedema B. et al. The influence of gender and other patient characteristics on health care-seeking behavior: A QUALICOPC study. BMC Fam Pract. 2016; 17**:** 38